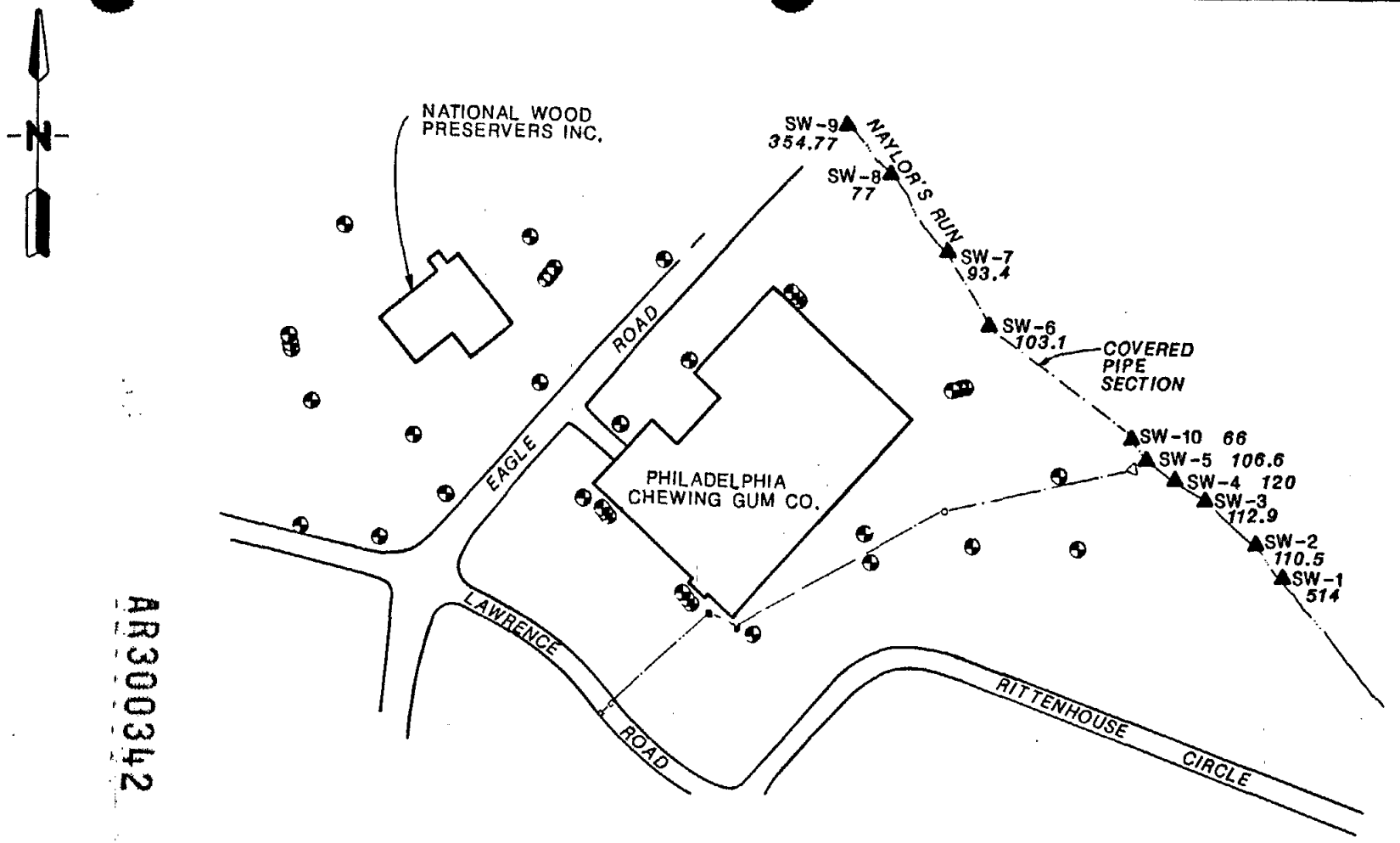
magnesium, and potassium may be found naturally in the water due to the nature of the soil material in and around Naylors Run.

As shown by Figure 6-1, the greatest concentration of total dissolved selected metals, consisting of arsenic, cadmium, chromium, copper, lead, and zinc, was detected at surface water location SW-1. From the data presented in Figure 6-1, there does not appear to be a particular pattern of distribution of the selected metals in the surface water samples taken at Naylors Run.

Volatile organic compounds including benzene, toluene, xylene, 1,1,1-trichloroethane, and trichloroethene were detected in those surface water samples collected downstream (surface water samples SW-1 to SW-5) of the storm water outfall. These compounds were not detected in samples which were collected above the storm water outfall (SW-6 to SW-10). Concentrations of volatile organic compounds which were detected in samples collected above the storm sewer outfall were chloroform and bromodichloromethane. These results shown in Table 6-3 indicate that the majority of volatile compounds in Naylors Run may be entering the stream from or near the 36-inch storm sewer pipe. Figure 6-2 shows the total concentrations of volatile compounds which were detected at each sampling location. Again, it is apparent that the majority of VOAs were detected in samples SW-1 through SW-5, with the greatest concentrations detected immediately at the storm sewer pipe in sample SW-5. The presence of VOAs in samples SW-6 through SW-10 may be indicative of sources other than the subsurface fuel oil.



AR300342

6-10

LEGEND

- EXISTING WELL LOCATIONS
- STORM SEWER
- ▲SW-9 SURFACE WATER SAMPLING POINT

SELECTED METALS = ARSENIC, CADMIUM, CHROMIUM, COPPER, LEAD, AND ZINC

200' 0 200'
SCALE IN FEET

FIGURE 6-1

HAVERTOWN PCP SITE
HAVERTOWN, PA

SURFACE WATER TOTAL SELECTED METALS (ug/l)

drawn SS	approved JAW	drawing no. 86021-057-AA
checked JST	date 6-14-88	

T. C. wright associates, inc.
earth resources consultants
middletown pennsylvania

Table 6-3

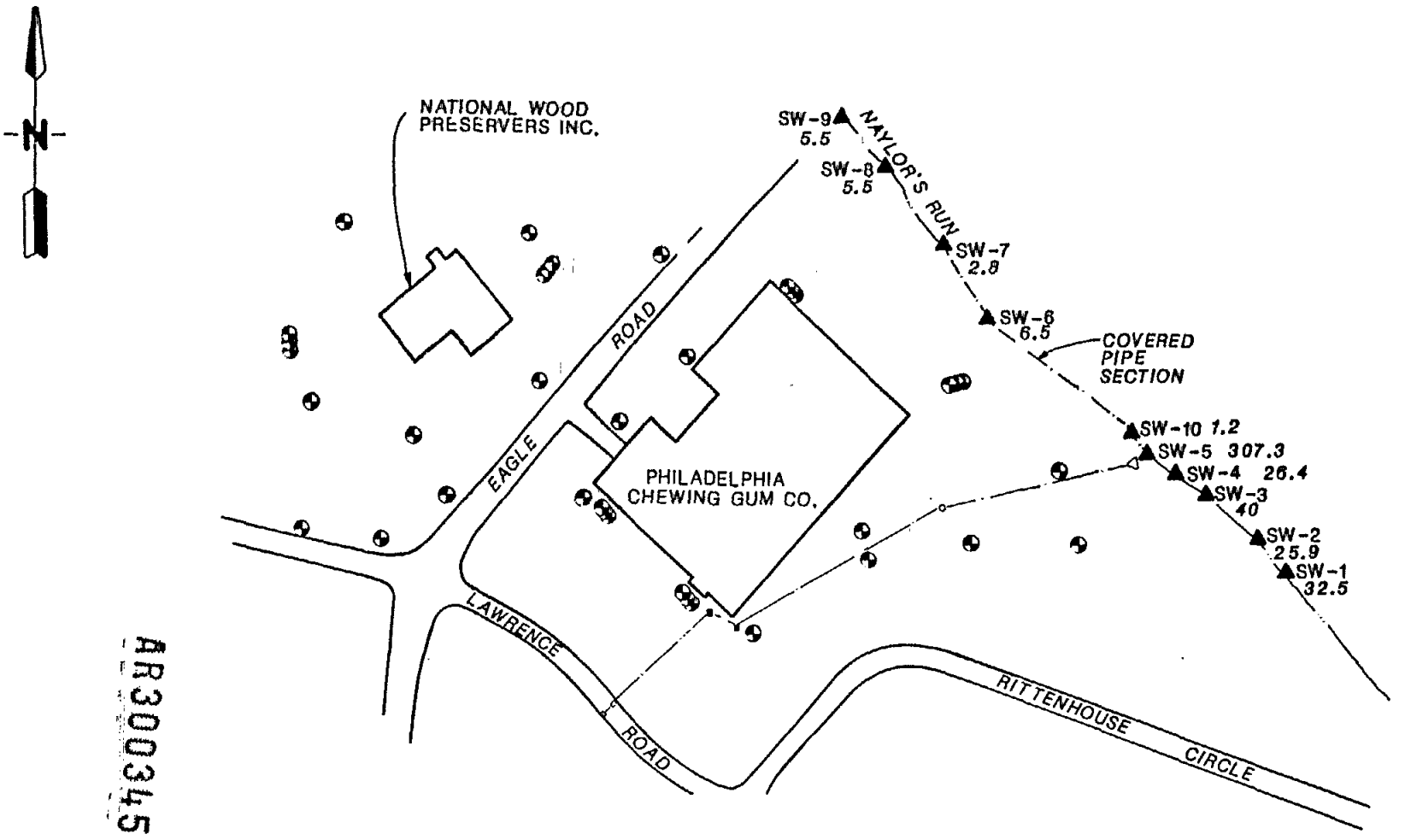
Surface Water Volatile Organic Results

	SITE	84021		84021		84021		84021		84021		84021		84021	
	POINT	SURF WAT		SURF WAT		SURF WAT		SURF WAT		SURF WAT		SURF WAT		SURF WAT	
	SAMPLE	SW-1		SW-2		SW-3		SW-4		SW-5		SW-6		SW-7	
	DATE	07/24/87		07/24/87		07/24/87		07/24/87		07/24/87		07/24/87		07/24/87	
	DEPTH	0		0		0		0		0		0		0	
	MATRIX	WA		WA		WA		WA		WA		WA		WA	
	V.O.C. LAB ID #	143034		143036		143046		143048		143049		143050		143051	
203 V	BENZENE	BDL	5.0 ug/l	3.8	J ug/l	9.5	ug/l	4.4	J ug/l	70	ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
205 V	BROMOFORM	BDL	5.0 ug/l	BDL	5 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
206 V	CARBON TETRACHLORIDE	BDL	5.0 ug/l	1.7	J ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
207 V	CHLOROBENZENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
208 V	DIBROMOCHLOROMETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
209 V	CHLOROETHANE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
210 V	2-CHLOROETHYLVINYLETHER	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	1.9	J ug/l	BDL	10 ug/l	BDL	10 ug/l
211 V	CHLOROFORM	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	1.4	B ug/l	1.3	J ug/l
212 V	BROMODICHLOROMETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
214 V	1,1-DICHLOROETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
215 V	1,2-DICHLOROETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	2.8	J ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
216 V	1,1-DICHLOROETHENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
217 V	1,2-DICHLOROPROPANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
218 V	CIS-1,3-DICHLOROPROPENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
219 V	ETHYLBENZENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
220 V	BROMOMETHANE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
221 V	CHLOROMETHANE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
222 V	METHYLENE CHLORIDE	8.4	B ug/l	3.6	J B ug/l	2.9	J B ug/l	2.5	J B ug/l	1.7	J B ug/l	5.1	B ug/l	1.5	J B ug/l
223 V	1,1,2,2-TETRACHLOROETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
224 V	TETRACHLOROETHENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
225 V	TOLUENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	7.8	ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
226 V	TRANS-1,2-DICHLOROETHENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	9.1	ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
227 V	1,1,1-TRICHLOROETHANE	1.6	J ug/l	1.7	J ug/l	2.3	J ug/l	2.5	J ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
228 V	1,1,2-TRICHLOROETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
229 V	TRICHLOROETHENE	1.8	J ug/l	2.1	J ug/l	3.3	J ug/l	3.0	J ug/l	16	ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
230 V	VINYL CHLORIDE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
250 V	TRANS-1,3-DICHLOROPROPENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
251 V	STYRENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
252 V	ACETONE	16	ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	18	ug/l	BDL	10 ug/l	BDL	10 ug/l
253 V	2-BUTANONE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
254 V	CARBON DISULFIDE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
255 V	2-HEXANONE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
256 V	4-METHYL-2-PENTANONE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
257 V	VINYL ACETATE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
289 V	XYLENES (TOTAL)	4.7	J ug/l	13	ug/l	22	ug/l	14	ug/l	180	ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l

Table 6-3 (Cont'd)

Surface Water Volatile Organic Results

	SITE	86021		86021		86021		86021	
	POINT	SURF WAT		SURF WAT		SURF WAT		SURF WAT	
	SAMPLE	SW-8		SW-9		SW-9 DUP		SW-10	
	DATE	07/24/87		07/24/87		07/24/87		07/24/87	
	DEPTH	0		0		0		0	
	MATRIX	WA		WA		WA		WA	
CMPD CL	CMPD-DESC								
	V.O.C. LAB ID #	143052		143053		143056		143055	
203 V	BENZENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
205 V	BROMOFORM	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
206 V	CARBON TETRACHLORIDE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
207 V	CHLOROBENZENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
208 V	DIBROMOCHLOROMETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
209 V	CHLOROETHANE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
210 V	2-CHLOROETHYLVINYLETHER	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
211 V	CHLOROFORM	1.9	J ug/l	2.2	J ug/l	2.3	J ug/l	BDL	5.0 ug/l
212 V	BROMODICHLOROMETHANE	1.2	J ug/l	1.6	J ug/l	1.6	J ug/l	BDL	5.0 ug/l
214 V	1,1-DICHLOROETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
215 V	1,2-DICHLOROETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
216 V	1,1-DICHLOROETHENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
217 V	1,2-DICHLOROPROPANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
218 V	CIS-1,3-DICHLOROPROPENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
219 V	ETHYLBENZENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
220 V	BROMOMETHANE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
221 V	CHLOROMETHANE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
222 V	METHYLENE CHLORIDE	2.4	J B ug/l	1.7	J B ug/l	1.6	J B ug/l	1.2	J B ug/l
223 V	1,1,2,2-TETRACHLOROETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
224 V	TETRACHLOROETHENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
225 V	TOLUENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
226 V	TRANS-1,2-DICHLOROETHENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
227 V	1,1,1-TRICHLOROETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
228 V	1,1,2-TRICHLOROETHANE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
229 V	TRICHLOROETHENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
231 V	VINYL CHLORIDE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
250 V	TRANS-1,3-DICHLOROPROPENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
251 V	STYRENE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
252 V	ACETONE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
253 V	2-BUTANONE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
254 V	CARBON DISULFIDE	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l
255 V	2-HEXANONE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
256 V	4-METHYL-2-PENTANONE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
257 V	VINYL ACETATE	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l	BDL	10 ug/l
289 V	XYLENES (TOTAL)	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l	BDL	5.0 ug/l



AR300345

LEGEND

- EXISTING WELL LOCATIONS
- STORM SEWER
- ▲SW-9 SURFACE WATER SAMPLING POINT

200' 0 200'

SCALE IN FEET

FIGURE 6-2

HAVERTOWN PCP SITE
HAVERTOWN, PA

SURFACE WATER TOTAL VOLATILE ORGANIC (ug/l)

drawn SS	approved JNW	drawing no. 86021-058-AA
checked JST	date 6-14-88	

E. B. Wright associates, Inc.
earth resource consultants
middletown pennsylvania

The base neutral/acid extractable compound which was consistently detected in surface water samples at elevated concentrations was pentachlorophenol, with lesser amounts of acenaphthene, anthracene, fluorene, phenanthrene, 2,methylnaphthalene, and 2,4-dichlorophenol also detected. PCP was only found above detection limits in surface water samples collected from below the storm water discharge pipe, SW-1 through SW-5, with the greatest concentration detected in SW-5 at a level of 660 ug/l. Detection limits at sampling locations above the storm sewer outlet were relatively high (100 ug/l) so the presence of PCP at these locations should not be ruled out. Table 6-4 contains the results of the base neutral and acid extractable analysis. The compound PCP was useful in ascertaining the extent of contamination from NWP because of its use as a wood preserving agent at the site for many years. Figure 6-3 presents the distribution of PCP in the surface waters of Naylors Run.

Pesticides and polychlorinated biphenols (PCB) analyses were completed on the 10 surface water samples. The concentrations of these contaminants were below detection levels in all surface water samples, as illustrated by Table 6-5. Also included on this table are the results of cyanide analysis. Cyanide levels were below detection limits in all samples except for SW-10, which contained 10 ug/l of cyanide.

Samples for dioxin and dibenzofuran were analyzed for total tetra- through octa-chlorinated dibenzodioxins and dibenzofurans. The toxicity equivalent factor (TEF) was calculated by EPA Region III to assess the results of the dioxin analysis, assuming the results were due to the 2,3,7,8-tetrachlorinated dioxin isomer. If the TEF was greater than one part per billion, a second analysis was completed to identify the specific dioxin and

Table 6-4

Surface Water Base Neutral/Acid Extractable Results

	SITE	84021		84021		84021		84021		84021		84021		84021	
	POINT	SURF WAT		SURF WAT		SURF WAT		SURF WAT		SURF WAT		SURF WAT		SURF WAT	
	SAMPLE	SW-1		SW-2		SW-3		SW-4		SW-5		SW-6		SW-7	
	DATE	07/24/87		07/24/87		07/24/87		07/24/87		07/24/87		07/24/87		07/24/87	
	DEPTH	0		0		0		0		0		0		0	
	MATRIX	WA		WA		WA		WA		WA		WA		WA	
CMPD	CL	CMPD-DESC													
		ACID EXTRACT/ BASE NEUT. LAB ID #	143034		143036		143046		143048		143049		143050		143051	
401	B	ACENAPHTHENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	6.6	J ug/l	BDL	20 ug/l	BDL	20 ug/l
402	B	ACENAPHTHYLENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
403	B	ANTHRACENE	BDL	20 ug/l	BDL	40 ug/l	2.2	J ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
405	B	BENZO(A)ANTHRACENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
406	B	BENZO(A)PYRENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
407	B	BENZO(B)FLUORANTHENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
408	B	BENZO(G,H,I)PERYLENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
409	B	BENZO(K)FLUORANTHENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
410	B	BIS(-2-CHLOROETHOXY)METHANE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
411	B	BIS(-2-CHLOROETHYL)ETHER	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
412	B	BIS(2-CHLORDISOPROPYL)ETHER	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
413	B	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	3	J ug/l
414	B	4-BROMOPHENYL-PHENYLETHER	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
415	B	BUTYLBENZYLPHTHALATE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
416	B	2-CHLORONAPHTHALENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
417	B	4-CHLOROPHENYL-PHENYLETHER	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
418	B	CHRYSENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
419	B	DIBENZ(A,H)ANTHRACENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
420	B	1,2-DICHLOROBENZENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
421	B	1,3-DICHLOROBENZENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
422	B	1,4-DICHLOROBENZENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
423	B	3,3'-DICHLOROBENZIDINE	BDL	40 ug/l	BDL	80 ug/l	BDL	40 ug/l	BDL	40 ug/l	BDL	40 ug/l	BDL	40 ug/l	BDL	40 ug/l
424	B	DIETHYLPHTHALATE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
425	B	DIMETHYL PHTHALATE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
426	B	DI-N-BUTYLPHTHALATE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	3.0	J ug/l	BDL	20 ug/l	BDL	20 ug/l
427	B	2,4-DINITROTOLUENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
428	B	2,6-DINITROTOLUENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
429	B	DI-N-OCTYL PHTHALATE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l

R300347

Table [illegible] (Cont'd)

Surface Water Base Neutral/Acid Extractable Results

		SITE	86021		86021		86021		86021		86021		86021		86021	
		POINT	SURF WAT		SURF WAT		SURF WAT		SURF WAT		SURF WAT		SURF WAT		SURF WAT	
		SAMPLE	SW-1		SW-2		SW-3		SW-4		SW-5		SW-6		SW-7	
		DATE	07/24/87		07/24/87		07/24/87		07/24/87		07/24/87		07/24/87		07/24/87	
		DEPTH	0		0		0		0		0		0		0	
		MATRIX	WA		WA		WA		WA		WA		WA		WA	
CMPD	CL	CMPD-DESC														
		ACID EXTRACT/ BASE NEUT. LAB ID #	143034		143036		143046		143048		143049		143050		143051	
431	B	FLUORANTHENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
432	B	FLUORENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	11	J ug/l	BDL	20 ug/l	BDL	20 ug/l
433	B	HEXACHLOROBENZENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
434	B	HEXACHLOROBUTADIENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
435	B	HEXACHLOROCYCLOPENTADIENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
436	B	HEXACHLOROETHANE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
437	B	INDENO(1,2,3-CD)PYRENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
438	B	ISOPHORONE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
439	B	NAPHTHALENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
440	B	NITROBENZENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
442	B	N-NITROSO-DI-N-PROPYLAMINE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
443	B	N-NITROSODIPHENYLAMINE(1)	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
444	B	PHENANTHRENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	17	J ug/l	BDL	20 ug/l	BDL	20 ug/l
445	B	PYRENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
446	B	1,2,4-TRICHLOROBENZENE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
474	B	BENZYL ALCOHOL	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	2	J ug/l	BDL	20 ug/l	BDL	20 ug/l
475	B	4-CHLOROANILINE	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
476	B	DIBENZOFURAN	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	5	J ug/l	BDL	20 ug/l	BDL	20 ug/l
477	B	2-METHYLNAPHTHALENE	BDL	20 ug/l	BDL	40 ug/l	2	J ug/l	BDL	20 ug/l	8.4	J ug/l	BDL	20 ug/l	BDL	20 ug/l
478	B	2-NITROANILINE	BDL	100 ug/l	BDL	200 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
479	B	3-NITROANILINE	BDL	100 ug/l	BDL	200 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
480	B	4-NITROANILINE	BDL	100 ug/l	BDL	200 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
601	A	2-CHLOROPHENOL	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
602	A	2,4-DICHLOROPHENOL	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	19	J ug/l	BDL	20 ug/l	BDL	20 ug/l
603	A	2,4-DIMETHYLPHENOL	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
604	A	4,6-DINITRO-2-METHYLPHENOL	BDL	100 ug/l	BDL	200 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
609	A	2,4-DINITROPHENOL	BDL	100 ug/l	BDL	200 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
599	A	2-NITROPHENOL	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
607	A	4-NITROPHENOL	BDL	100 ug/l	BDL	200 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
605	A	4-CHLORO-3-METHYLPHENOL	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
610	A	PENTACHLOROPHENOL	230	ug/l	330	ug/l	120	ug/l	140	ug/l	660	ug/l	BDL	100 ug/l	BDL	100 ug/l
611	A	PHENOL	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
612	A	2,4,6-TRICHLOROPHENOL	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
420	A	2-METHYLPHENOL	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
422	A	4-METHYLPHENOL	BDL	20 ug/l	BDL	40 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
625	A	BENZOIC ACID	BDL	100 ug/l	BDL	200 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
626	A	2,4,5-TRICHLOROPHENOL	BDL	100 ug/l	BDL	200 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l

Table 6-4 (Cont'd)

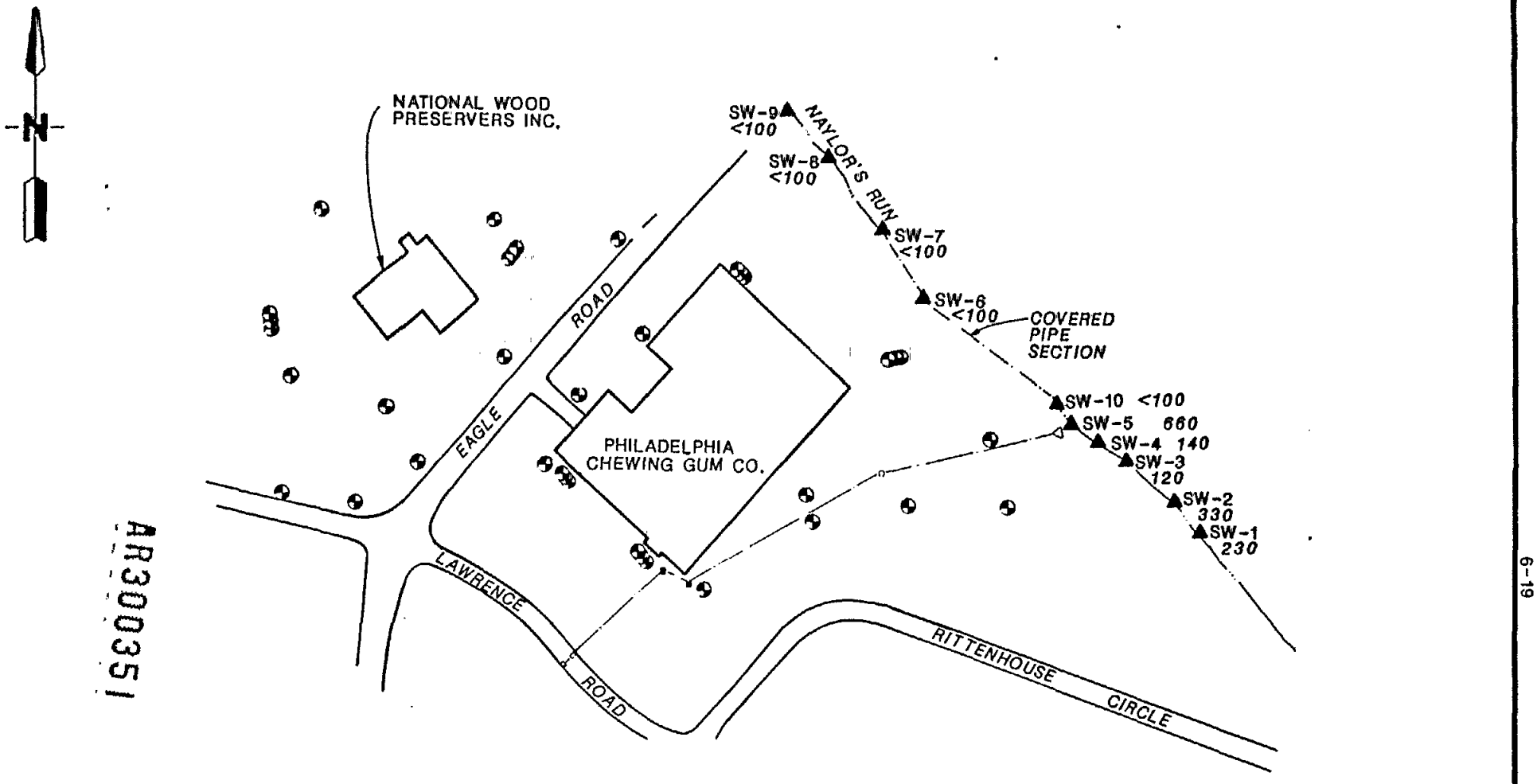
Surface Water Base Neutral/Acid Extractable Results

		SITE	84021		84021		84021		84021	
		POINT	SURF WAT		SURF WAT		SURF WAT		SURF WAT	
		SAMPLE	SW-8		SW-9		SW-9 DUP		SW-10	
		DATE	07/24/87		07/24/87		07/24/87		07/24/87	
		DEPTH	0		0		0		0	
		MATRIX	WA		WA		WA		WA	
CMPD	CL	CMPD-DESC								
		ACID EXTRACT/ BASE NEUT. LAB ID #	143052		143053		143056		143055	
401	B	ACENAPHTHENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
402	B	ACENAPHTHYLENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
403	B	ANTHRACENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
405	B	BENZO(A)ANTHRACENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
406	B	BENZO(A)PYRENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
407	B	BENZO(B)FLUORANTHENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
408	B	BENZO(G,H,I)PERYLENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
409	B	BENZO(K)FLUORANTHENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
410	B	BIS(-2-CHLOROETHOXY)METHANE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
411	B	BIS(-2-CHLOROETHYL)ETHER	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
412	B	BIS(2-CHLOROISOPROPYL)ETHER	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
413	B	BIS(2-ETHYLHEXYL)PHTHALATE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
414	B	4-BROMOPHENYL-PHENYLETHER	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
415	B	BUTYLBENZYLPHTHALATE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
416	B	2-CHLORONAPHTHALENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
417	B	4-CHLOROPHENYL-PHENYLETHER	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
418	B	CHRYSENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
419	B	DIBENZ(A,H)ANTHRACENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
420	B	1,2-DICHLOROBENZENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
421	B	1,3-DICHLOROBENZENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
422	B	1,4-DICHLOROBENZENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
423	B	3,3'-DICHLOROBENZIDINE	BDL	40 ug/l	BDL	40 ug/l	BDL	40 ug/l	BDL	40 ug/l
424	B	DIETHYLPHTHALATE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
425	B	DIMETHYL PHTHALATE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
426	B	DI-N-BUTYLPHTHALATE	BDL	20 ug/l	BDL	20 ug/l	4.4	J ug/l	BDL	20 ug/l
427	B	2,4-DINITROTOLUENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
428	B	2,6-DINITROTOLUENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
429	B	DI-N-OCTYL PHTHALATE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l

Tab (Cont'd)

Surface Water Base Neutral/Acid Extractable Results

		SITE	86021		86021		86021		86021	
		POINT	SURF WAT		SURF WAT		SURF WAT		SURF WAT	
		SAMPLE	SW-8		SW-9		SW-9 DUP		SW-10	
		DATE	07/24/87		07/24/87		07/24/87		07/24/87	
		DEPTH	0		0		0		0	
		MATRIX	WA		WA		WA		WA	
CMPD	CL	CMPD-DESC								
		ACID EXTRACT/ BASE NEUT. LAB ID #	143052		143053		143056		143055	
431	B	FLUORANTHENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
432	B	FLUORENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
433	B	HEXACHLOROBENZENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
434	B	HEXACHLOROBUTADIENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
435	B	HEXACHLOROCYCLOPENTADIENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
436	B	HEXACHLOROETHANE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
437	B	INDENO(1,2,3-CD)PYRENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
438	B	ISOPHORONE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
439	B	NAPHTHALENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
440	B	NITROBENZENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
442	B	N-NITROSO-DI-N-PROPYLAMINE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
443	B	N-NITROSODIPHENYLAMINE(1)	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
444	B	PHENANTHRENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
445	B	PYRENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
446	B	1,2,4-TRICHLOROBENZENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
474	B	BENZYL ALCOHOL	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
475	B	4-CHLOROANILINE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
476	B	DIBENZOFURAN	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
477	B	2-METHYLNAPHTHALENE	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
478	B	2-NITROANILINE	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
479	B	3-NITROANILINE	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
480	B	4-NITROANILINE	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
601	A	2-CHLOROPHENOL	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
602	A	2,4-DICHLOROPHENOL	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
603	A	2,4-DIMETHYLPHENOL	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
604	A	4,6-DINITRO-2-METHYLPHENOL	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
605	A	2,4-DINITROPHENOL	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
606	A	2-NITROPHENOL	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
607	A	4-NITROPHENOL	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
608	A	4-CHLORO-3-METHYLPHENOL	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
609	A	PENTACHLOROPHENOL	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
610	A	PHENOL	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
611	A	2,4,6-TRICHLOROPHENOL	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
620	A	2-METHYLPHENOL	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
622	A	4-METHYLPHENOL	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l	BDL	20 ug/l
625	A	BENZOIC ACID	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l
626	A	2,4,5-TRICHLOROPHENOL	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l	BDL	100 ug/l



LEGEND

- EXISTING WELL LOCATIONS
- STORM SEWER
- ▲SW-9 SURFACE WATER SAMPLING POINT
- <100 ANALYSIS DETECTION LIMIT

200' 0 200'

SCALE IN FEET

FIGURE 6-3

HAVERTOWN PCP SITE
HAVERTOWN, PA

SURFACE WATER PENTACHLOROPHENOL (ug/l)

drawn	approved	drawing no.
SS	JNW	86021-059-AA
checked JST	date 6-15-88	

J. S. Wright associates, inc.
earth resources consultants
middletown pennsylvania

Surface Water Pesticides/PCB and Cyanide Results

	SITE	86021	86021	86021	86021	86021	86021	86021
	POINT	SURF WAT	SURF WAT	SURF WAT	SURF WAT	SURF WAT	SURF WAT	SURF WAT
	SAMPLE	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7
	DATE	07/24/87	07/24/87	07/24/87	07/24/87	07/24/87	07/24/87	07/24/87
	DEPTH	0	0	0	0	0	0	0
	MATRIX	WA	WA	WA	WA	WA	WA	WA
CMPD CL	CMPD-DESC							
	PESTICIDES / PCB LAB ID #	143034	143036	143046	143048	143049	143050	143051
701 P	ALDRIN	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.10 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
702 P	ALPHA-BHC	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.10 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
703 P	BETA-BHC	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.10 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
704 P	GAMMA-BHC	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.10 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
705 P	DELTA-BHC	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.10 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
706 P	CHLORDANE	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 1.0 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
707 P	4,4'-DDT	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.20 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
708 P	4,4'-DDE	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.20 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
709 P	4,4'-DDD	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.20 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
710 P	DIELDRIN	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.20 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
711 P	ALPHA-ENDOSULFAN	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.10 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
712 P	BETA-ENDOSULFAN	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.20 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
713 P	ENDOSULFAN SULFATE	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.20 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
714 P	ENDRIN	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.20 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
716 P	HEPTACHLOR	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.10 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
717 P	HEPTACHLOR EPOXIDE	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.10 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
718 P	PCB-1242	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 1.0 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
719 P	PCB-1254	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l	BDL 2.0 ug/l	BDL 1 ug/l	BDL 1 ug/l
720 P	PCB-1221	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 1.0 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
721 P	PCB-1232	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 1.0 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
722 P	PCB-1248	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 1.0 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
723 P	PCB-1260	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l	BDL 2.0 ug/l	BDL 1 ug/l	BDL 1 ug/l
724 P	PCB-1016	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 1.0 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
725 P	TOXAPHENE	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l	BDL 2.0 ug/l	BDL 1 ug/l	BDL 1 ug/l
726 P	P,P'-METHOXYCHLOR	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 1.0 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
739 P	ENDRIN KETONE	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.2 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
		143081	143024	143025	143026	143027	143028	143029
1001 C	CYANIDE	BDL 10 ug/l	BDL 10 ug/l	BDL 10 ug/l	BDL 10 ug/l	BDL 10 ug/l	BDL 10 ug/l	BDL 10 ug/l

Table 6-5 (Cont'd)

Surface Water Pesticides/PCB and Cyanide Results

		SITE	84021	84021	84021	84021
		POINT	SURF WAT	SURF WAT	SURF WAT	SURF WAT
		SAMPLE	SW-8	SW-9	SW-9 DUP	SW-10
		DATE	07/24/87	07/24/87	07/24/87	07/24/87
		DEPTH	0	0	0	0
		MATRIX	WA	WA	WA	WA
CMPD	CL	CMPD-DESC				
		PESTICIDES / PCB LAB ID #	143052	143053	143054	143055
701	P	ALDRIN	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
702	P	ALPHA-BHC	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
703	P	BETA-BHC	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
704	P	GAMMA-BHC	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
705	P	DELTA-BHC	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
706	P	CHLORDANE	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
707	P	4,4'-DDT	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
708	P	4,4'-DDE	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
709	P	4,4'-DDD	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
710	P	DIELDRIN	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
711	P	ALPHA-ENDOSULFAN	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
712	P	BETA-ENDOSULFAN	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
713	P	ENDOSULFAN SULFATE	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
714	P	ENDRIN	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
716	P	HEPTACHLOR	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
717	P	HEPTACHLOR EPOXIDE	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l	BDL 0.05 ug/l
718	P	PCB-1242	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
719	P	PCB-1254	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l
720	P	PCB-1221	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
721	P	PCB-1232	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
722	P	PCB-1248	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
723	P	PCB-1260	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l
724	P	PCB-1016	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
725	P	TOXAPHENE	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l	BDL 1 ug/l
726	P	P,P'-METHOXYCHLOR	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l	BDL 0.5 ug/l
739	P	ENDRIN KETONE	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l	BDL 0.1 ug/l
			143030	143031	143033	143032
1001	C	CYANIDE	BDL 10 ug/l	BDL 10 ug/l	BDL 10 ug/l	10 ug/l

dibenzofuran isomers as described by the SAS request included here as Appendix 3. The TEF values for all surface water samples were less than 1 ppb. The TEF values, however, were not reported here because TEF values are associated with risk assessment. Therefore, the actual concentrations of each isomer were reported.

Dioxin isomers, which were identified above detection limits, comprised only two of the five groups of dioxin isomers, namely octa- and hepta-. The octa-dioxin isomer was consistently found in concentrations greater than the hepta-isomers. Total concentrations of dioxin ranged from below detection levels to 20.3 ppt. Surface water samples SW-1 through SW-5, with the exception of SW-3, contained elevated levels of dioxin. These samples were collected downstream of the storm sewer outfall at SW-5. Dioxin levels were below detection limits at locations above the storm sewer outfall (surface water sampling locations SW-6 through SW-10). The results of the dioxin analysis of surface water samples are included as Table 6-6.

Dibenzofuran isomers were found in 5 of the 10 surface water samples at levels above detection limits. Concentrations of total dibenzofurans ranged from below detection level up to 13.9 ppt. Like their dioxin counterparts, the octa-isomer was found consistently in greater concentrations than the hepta-isomer. In addition, samples SW-1 through SW-5, with the exception of SW-3, contained elevated levels of dibenzofurans. These sampling points were located downstream of the storm water sewer discharge pipe. Surface water samples collected upstream of the storm sewer discharge pipe, samples SW-6 through SW-10,

Table 6-6

Surface Water Dioxin Results

SITE:	86021	86021	86021	86021	86021	86021	86021
POINT:	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7
LAB ID #:	30648-17	30648-15	30648-20	30648-16	30648-18	30648-5RI	30648-8
GC/MS DATE:	8-20-87	8-20-87	8-20-87	8-20-87	8-20-88	8-19-87	8-19-87
MATRIX:	WA	WA	WA	WA	WA	WA	WA
COP NAME							
TCDD	BDL 0.052 ppt	BDL 0.056 ppt	BDL 0.032 ppt	BDL 0.034 ppt	BDL 0.025 ppt	BDL 0.058 ppt	BDL 0.049 ppt
2378 TCDD	BDL 0.052 ppt	BDL 0.056 ppt	BDL 0.032 ppt	BDL 0.034 ppt	BDL 0.052 ppt	BDL 0.058 ppt	BDL 0.049 ppt
PnCDD	BDL 0.22 ppt	BDL 0.10 ppt	BDL 0.13 ppt	BDL 0.13 ppt	BDL 0.24 ppt	BDL 0.38 ppt	BDL 0.14 ppt
12378 PnCDD							
HxCDD	BDL 0.13 ppt	BDL 0.12 ppt	BDL 0.084 ppt	BDL 0.10 ppt	BDL 0.11 ppt	BDL 0.13 ppt	BDL 0.092 ppt
123478 HxCDD							
123678 HxCDD							
123789 HxCDD							
HpCDD	1.4 ppt	3.9 ppt	BDL 0.26 ppt	3.3 ppt	4.7 ppt	BDL 0.21 ppt	BDL 0.14 ppt
1234678 HpCDD							
OCDD	5.8 ppt	14.4 ppt	BDL 1.6 ppt	11.6 ppt	15.6 ppt	BDL 0.47 ppt	BDL 0.38 ppt

(= MPC)

Table 6-6 (Cont'd)

Surface Water Dioxin Results

	SITE:	86021	86021	86021	86021
	POINT:	SW-8	SW-9(DUP)	SW-9	SW-10
	LAB ID #:	30648-4	30648-6	30648-7	30648-19
	GC/MS DATE:	8-19-87	8-19-87	8-19-87	8-20-87
	MATRIX:	WA	WA	WA	WA
COP NAME					
TCDD		BDL 0.083 ppt	BDL 0.16 ppt	BDL 0.064 ppt	BDL 0.04 ppt
2378 TCDD		BDL 0.083 ppt	BDL 0.16 ppt	BDL 0.064 ppt	BDL 0.04 ppt
PnCDD		BDL 0.17 ppt	BDL 0.51 ppt	BDL 0.16 ppt	BDL 0.19 ppt
12378 PnCDD					
HxCDD		BDL 0.18 ppt	BDL 0.29 ppt	BDL 0.094 ppt	BDL 0.11 ppt
123478 HxCDD					
123678 HxCDD					
123789 HxCDD					
HpCDD		BDL 0.48 ppt	BDL 0.34 ppt	BDL 0.17 ppt	BDL 0.26 ppt
1234678 HpCDD					
OCDD		BDL 1.8 ppt	BDL 1.5 ppt	BDL 0.54 ppt	BDL 0.79 ppt

(= MPC)

did not have dibenzofurans detected. The results of the dibenzofuran analysis are included here as Table 6-7.

6.2.4 Summary of Findings

The results from chemical analyses completed on surface water samples collected from Naylors Run indicate that contaminants which may be associated with the NWP are present in the surface water near and below the storm sewer outlet. The concentrations and number of chemicals were greatest in those samples collected downstream of the 36-inch storm sewer outfall, surface water samples SW-1 to SW-5. Concentrations of contaminants were elevated in samples collected near the storm sewer outlet and generally decreased in concentration for samples collected downstream. Contamination in the samples collected at locations above the storm sewer outlet, surface water samples SW-6 to SW-10, consisted mainly of various heavy metals and a limited number of volatile organics, which may be associated with the NWP site, as well as nearby off-site sources.

The chemicals detected in surface water samples SW-1 to SW-5 included PCP, naphthalene, 2-methylnaphthalene, phenanthrene, benzene, toluene, and xylene. These chemicals are believed to be associated with the fuel oil disposed of at NWP which was present on the stream's surface below the storm sewer outlet at SW-5. Concentrations of these chemicals were not detected in surface water samples where the floating oil was not present. Metals, which include copper, lead, barium, iron, potassium, sodium, calcium, magnesium, cobalt, aluminum, and zinc, were detected in all of the surface water samples. The presence of copper and zinc in the surface water may be associated with current

Table 6-7

Surface Water Dibenzofuran Results

	SITE:	86021	86021	86021	86021	86021	86021	86021
	POINT:	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7
	LAB ID #:	30648-17	30648-15	30648-20	30648-16	30648-18	30648-5RI	30648-8
	GC/MS DATE:	8-20-87	8-20-87	8-20-87	8-20-87	8-20-87	8-19-87	8-19-87
	MATRIX:	WA	WA	WA	WA	WA	WA	WA
CDF NAME								
TCDF		BDL 0.023 ppt	BDL 0.024 ppt	BDL 0.034 ppt	BDL 0.021 ppt	BDL 0.02 ppt	BDL 0.029 ppt	BDL 0.049 ppt
2378 TCDF		BDL 0.023 ppt	BDL 0.024 ppt	BDL 0.034 ppt	BDL 0.021 ppt	BDL 0.02 ppt	BDL 0.029 ppt	BDL 0.049 ppt
PnCDF		BDL 0.2 ppt	BDL 0.13 ppt	BDL 0.096 ppt	BDL 0.074 ppt	BDL 0.18 ppt	BDL 0.25 ppt	BDL 0.1 ppt
12378 PnCDF								
23478 PnCDF								
HxCDF		BDL 0.17 ppt	0.49 ppt	BDL 0.048 ppt	BDL 0.066 ppt	BDL 0.053 ppt	BDL 0.072 ppt	BDL 0.055 ppt
123478 HxCDF								
123678 HxCDF								
123789 HxCDF								
234678 HxCDF								
HpCDF		1.4 ppt	0.46 ppt	BDL 0.35 ppt	3.3 ppt	5.8 ppt	BDL 0.42 ppt	BDL 0.12 ppt
1234678 HpCDF								
1234789 HpCDF								
OCDF		2.5 ppt	7.0 ppt	BDL 0.81 ppt	5.5 ppt	8.1 ppt	BDL 0.51 ppt	BDL 0.31 ppt

(= MPC)

Table 6-7 (Cont'd)

Surface Water Dibenzofuran Results

SITE:	86021	86021	86021	86021
POINT:	SW-8	SW-9(DUP)	SW-9	SW-10
LAB ID #:	30648-4	30648-6	30648-7	30648-19
GC/MS DATE:	8-19-87	8-19-87	8-19-87	8-20-87
MATRIX:	WA	WA	WA	WA
CDF NAME				
TCDF	BDL 0.035 ppt	BDL 0.14 ppt	BDL 0.051 ppt	BDL 0.023 ppt
2378 TCDF	BDL 0.035 ppt	BDL 0.14 ppt	BDL 0.051 ppt	BDL 0.023 ppt
PnCDF	BDL 0.17 ppt	BDL 0.64 ppt	BDL 0.12 ppt	BDL 0.16 ppt
12378 PnCDF				
23478 PnCDF				
HxCDF	BDL 0.099 ppt	BDL 0.13 ppt	BDL 0.077 ppt	BDL 0.067 ppt
123478 HxCDF				
123678 HxCDF				
123789 HxCDF				
234678 HxCDF				
HpCDF	0.38 ppt	BDL 0.37 ppt	BDL 0.19 ppt	BDL 0.23 ppt
1234678 HpCDF				
1234789 HpCDF				
OCDF	BDL 0.090 ppt	BDL 0.92 ppt	BDL 0.36 ppt	BDL 0.46 ppt

(1 MPC)

wood-treating operations at NWP which utilize water-soluble metal-salt solutions for wood preservation.

It should be noted that dioxin and dibenzofuran isomers were detected in the surface water samples; however, their concentrations were very low, possibly because dioxin may degrade to less complex chlorinated compounds when exposed to ultraviolet light or because of dioxin's very low solubility in water.

6.3 Sediment Sampling of Naylors Run

Ten sediment samples from Naylors Run were collected on four separate days--July 15, 17, 22, and 23, 1987--during the first (preliminary) round of sampling at the Havertown PCP site. Sediment samples were analyzed for the complete HSL, plus oil and grease, by CompuChem, while dioxin and dibenzofuran isomers were analyzed by CAL under the direction of EPA. The purpose of the sediment sampling was to determine if contaminants were being adsorbed onto sediments creating areas of contaminant concentration in sediments at Naylors Run; and also to determine if contaminated sediments were influencing concentrations of contaminants in surface waters.

6.3.1 Sediment Sampling Locations

Previous experience from stream sediment sampling studies has indicated that metals and organic chemicals adsorb onto finer-grained sediments. Therefore, sampling locations were chosen that contained relatively fine sediments, while appearing representative of materials transported by the stream. Downstream sediment locations were sampled first and then progressed upstream to prevent degrading the quality of the

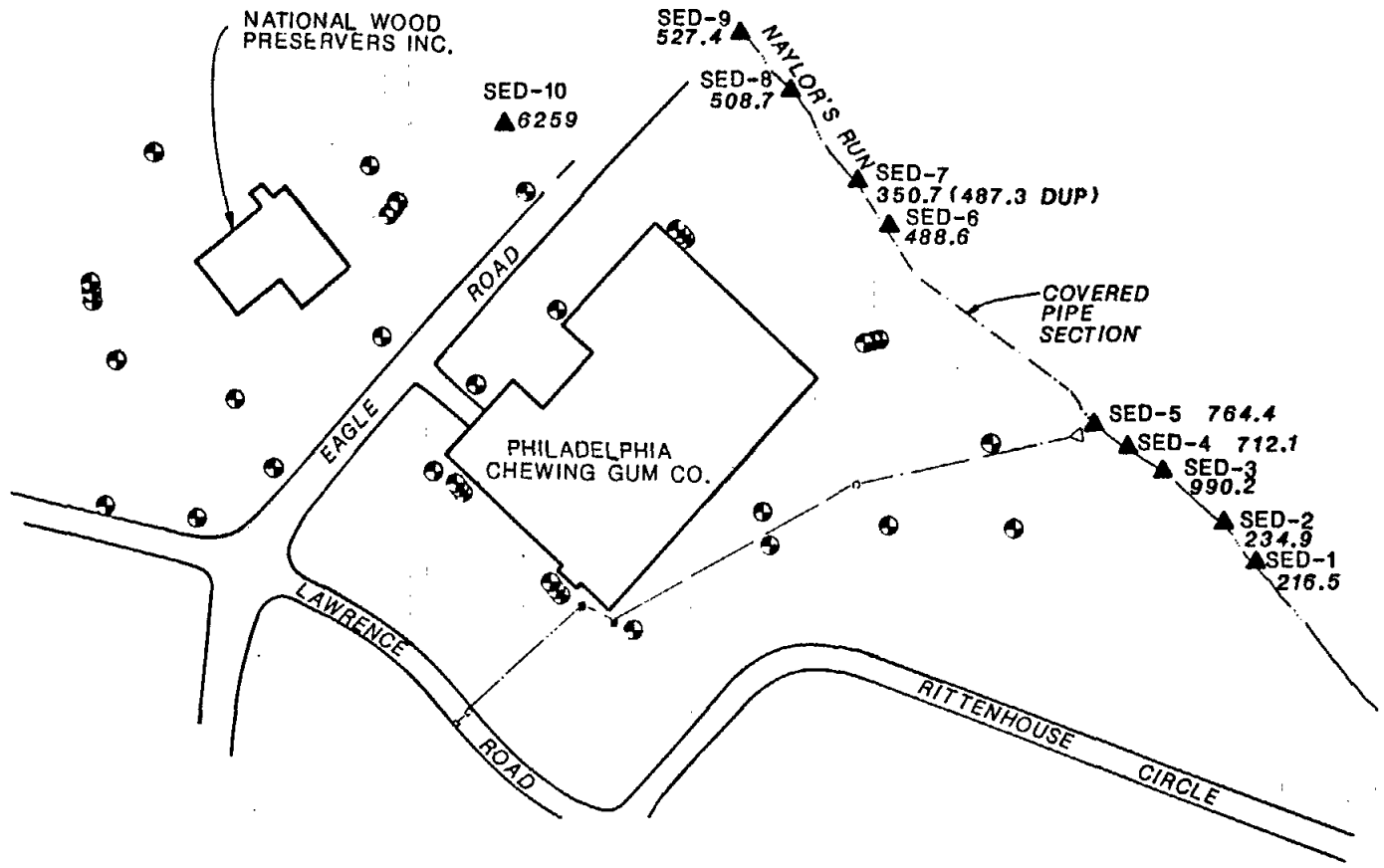
samples. All sample locations were staked or marked and designated SED-1 through SED-10 and plotted on the project base map. Because of hot weather conditions and high ambient VOA air readings in the samplers work zone (later confirmed to be the result of methane, presumably from decaying vegetation in the streambed), sediment sampling of Naylors Run was completed over four separate sampling dates.

6.3.2 Sediment Sampling Procedures

A laboratory-cleaned stainless-steel trowel was used to collect sediment at each sampling location. The appropriate sample jars were filled to two-thirds full of sediment, sealed, and cleaned with distilled and deionized water before being placed in a cooler to await final packaging and shipment. Quality control for the ten sediment samples consisted of one duplicate sample collected at sediment sampling location S-7, one performance evaluation (PE) sample supplied by the EPA, and one "blind" sample collected from REWAI property. The purpose of the "blind" sample and PE samples was to serve as an EPA check on CLP laboratory's QA/QC for the dioxin and dibenzofuran analysis. Results of the sediment sampling are included here in Appendix 2.

6.3.3 Chemical Results

Concentrations of HSL metals were found to be elevated in sediment samples, as they were in the surface water samples (Figure 6-4). The metal which was detected in the highest concentrations in both analyses was calcium with levels as high as 119,000 ug/l in sediment sample SED-10, which also had the most elevated total concentrations of metals.



AR300362

LEGEND

- EXISTING WELL LOCATIONS
- STORM SEWER
- ▲SED-9 SEDIMENT SAMPLING POINT

SELECTED METALS = ARSENIC, CADMIUM, CHROMIUM, COPPER, LEAD AND ZINC

200' 0 200'

SCALE IN FEET

FIGURE 6-4

HAVERTOWN PCP SITE
HAVERTOWN, PA

SEDIMENT
TOTAL SELECTED METALS
(mg/kg)

drawn SS	approved JNW	drawing no. 86021-063-AA
checked JST	date 6-15-98	

T. C. wright associates, inc.
earth resources consultants
middletown pennsylvania

The sediment sample analysis results differed from the surface water analysis results in that the total concentrations of arsenic, beryllium, chromium, copper, lead, mercury, and nickel were comparatively greater in all sediment samples collected. Of these metals, chromium and lead were detected in the greatest concentrations, 1,020 ug/kg and 401 ug/kg respectively. Chromium is a metal which has been used in the chromated copper arsenate solution at NWP, and lead is found in gasoline which may have entered Naylors Run through various pathways. The results of the HSL metals analysis on sediment samples is shown by Table 6-8.

No VOAs were detected in the sediment analysis summarized by Table 6-9. VOAs were possibly not detected in the sediments because the sediment sample jars were not septum-sealed VOA vials, potentially allowing volatilization of some VOAs present in the samples, and because VOAs do not adsorb to sediments nearly as readily as metals or BNA compounds.

Several base neutral and acid extractable compounds were detected at elevated levels in all of the sediment samples, as shown in Table 6-10. Pentachlorophenol was detected in sediment samples collected below the storm sewer outfall (SED-1 through SED-5) and also in sediment sample SED-10.

SED-10, located in the drainage ditch north of NWP property, had the most elevated concentration of PCP at 8700 ug/kg. This sample was located directly across from NWP in an area that receives surface water runoff directly from NWP property and storm water drainage from a storm sewer which runs along the south and east property line of NWP. The detection of PCP in soil samples collected on NWP property probably explains the presence of this compound in sediment sample SED-10. The

Table 6-8

Sediment Metals Results

CMPD	CL	CMPD-DESC	SITE	86021		86021		86021		86021		86021		86021		86021	
			POINT	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
			SAMPLE	SED#1		SED#2		SED#3		SED#4		SED#5		SED#6		SED-7	
			DATE	07/15/87		07/15/87		07/15/87		07/15/87		07/16/87		07/17/87		07/23/87	
			DEPTH	0		0		0		0		0		0		0	
			MATRIX	SE		SE		SE		SE		SE		SE		SE	
		METALS LAB ID #		141083		141090		141106		141111		141522		141691		142919	
101	M	ANTIMONY		BDL	13 UG/KG	BDL	14 UG/KG	BDL	13 UG/KG	BDL	12 UG/KG	BDL	12 UG/KG	BDL	15 UG/KG	BDL	13 UG/KG
102	M	ARSENIC		6.5	N F UG/KG	2.5	N F UG/KG	6.5	N F UG/KG	5.8	N F UG/KG	4.2	F UG/KG	2.6	F UG/KG	2.1	F UG/KG
103	M	BERYLLIUM		0.59	UG/KG	1.3	UG/KG	0.76	UG/KG	0.43	UG/KG	0.81	UG/KG	0.59	UG/KG	0.5	UG/KG
104	M	CADMIUM		BDL	1.1 UG/KG	1.4	UG/KG	1.7	UG/KG	2.3	UG/KG	1.2	N UG/KG	BDL	1.3 UG/KG	1.6	N UG/KG
105	M	CHROMIUM		36	N UG/KG	88	N UG/KG	302	N UG/KG	96	N UG/KG	300	UG/KG	44	UG/KG	60	UG/KG
106	M	COPPER		42	E N UG/KG	34	E N UG/KG	66	E N UG/KG	55	E N UG/KG	88	UG/KG	53	UG/KG	32	UG/KG
107	M	LEAD		46	UG/KG	16	F UG/KG	401	UG/KG	335	UG/KG	140	* UG/KG	135	* UG/KG	87	* UG/KG
108	M	MERCURY		BDL	0.11 UG/KG	BDL	0.14 UG/KG	BDL	0.12 UG/KG	0.13	CV UG/KG	BDL	0.12 UG/KG	0.21	* CV UG/KG	0.17	* CV UG/KG
109	M	NICKEL		7.8	UG/KG	26	UG/KG	9.8	UG/KG	9	UG/KG	18	UG/KG	15	UG/KG	13	UG/KG
110	M	SELENIUM		BDL	3.5 UG/KG	BDL	3.7 UG/KG	BDL	3.3 UG/KG	BDL	3.1 UG/KG	BDL	6.1 UG/KG	BDL	7.9 UG/KG	BDL	6.6 UG/KG
111	M	SILVER		BDL	1.9 UG/KG	BDL	2.1 UG/KG	BDL	1.9 UG/KG	BDL	1.7 UG/KG	BDL	1.7 UG/KG	BDL	2.2 UG/KG	BDL	1.9 UG/KG
112	M	THALLIUM		0.85	UG/KG	1.2	UG/KG	BDL	0.58 UG/KG	BDL	0.55 UG/KG	BDL	0.54 UG/KG	BDL	0.7 UG/KG	BDL	0.58 UG/KG
113	M	ZINC		86	UG/KG	93	UG/KG	213	UG/KG	218	UG/KG	231	UG/KG	254	UG/KG	168	UG/KG
114	M	BARIUM		85	UG/KG	206	UG/KG	111	UG/KG	70	UG/KG	102	UG/KG	60	UG/KG	42	UG/KG
115	M	IRON		15100	UG/KG	34200	UG/KG	32900	UG/KG	24900	UG/KG	54600	UG/KG	10800	UG/KG	9850	UG/KG
116	M	MANGANESE		300	N * UG/KG	295	N * UG/KG	2440	N * UG/KG	1370	* N UG/KG	10400	N UG/KG	476	N UG/KG	783	N UG/KG
117	M	VANADIUM		35	UG/KG	104	UG/KG	86	UG/KG	35	UG/KG	97	E UG/KG	19	E UG/KG	22	E UG/KG
118	M	ALUMINUM		9170	UG/KG	25200	UG/KG	8330	UG/KG	4800	UG/KG	5940	UG/KG	3870	UG/KG	2940	UG/KG
120	M	COBALT		6.8	E UG/KG	16	E UG/KG	8.2	E UG/KG	2.2	E UG/KG	1.7	UG/KG	3.8	UG/KG	2	UG/KG
121	M	MAGNESIUM		4360	E UG/KG	9030	E UG/KG	14500	E UG/KG	25600	E UG/KG	22400	UG/KG	9190	UG/KG	26700	UG/KG
129	M	CALCIUM		4680	* UG/KG	2860	* UG/KG	25200	* UG/KG	44900	* UG/KG	46000	UG/KG	17500	UG/KG	49700	UG/KG
130	M	SODIUM		532	UG/KG	960	UG/KG	971	UG/KG	881	UG/KG	743	UG/KG	BDL	568 UG/KG	734	UG/KG
131	M	POTASSIUM		1900	E UG/KG	7970	E UG/KG	4140	E UG/KG	903	E UG/KG	1720	UG/KG	BDL	730 UG/KG	BDL	629 UG/KG

Table 6-8 (Cont'd)
Sediment Metals Results

		SITE	86021		86021		86021		86021	
		POINT	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
		SAMPLE	SED-7 DUP		SED-8		SED-9		SED-10	
		DATE	07/23/87		07/23/87		07/23/87		07/23/87	
		DEPTH	0		0		0		0	
		MATRIX	SE		SE		SE		SE	
CMPD	CL	CMPD-DESC								
		METALS LAB ID #	142921		142922		142923		142929	
101	M	ANTIMONY	BDL	13 UG/KG	BDL	12 UG/KG	BDL	11 UG/KG	BDL	13 UG/KG
102	M	ARSENIC	2.3	F UG/KG	2.7	F UG/KG	3.3	UG/KG	1050	UG/KG
103	M	BERYLLIUM	0.6	UG/KG	0.51	UG/KG	0.7	UG/KG	0.51	UG/KG
104	M	CADMIUM	BDL	1.1 UG/KG	BDL	0.97 UG/KG	1.1	UG/KG	11	UG/KG
105	M	CHROMIUM	149	UG/KG	205	UG/KG	163	E N UG/KG	1020	E N UG/KG
106	M	COPPER	39	UG/KG	33	UG/KG	134	N UG/KG	437	N UG/KG
107	M	LEAD	80	UG/KG	84	N F UG/KG	159	E N UG/KG	231	E N UG/KG
108	M	MERCURY	0.25	CV UG/KG	BDL	0.12 UG/KG	BDL	0.11 UG/KG	1.5	N CV UG/KG
109	M	NICKEL	8.9	UG/KG	7.9	UG/KG	BDL	4.9 UG/KG	16	UG/KG
110	M	SELENIUM	BDL	7 UG/KG	BDL	6 UG/KG	BDL	5.8 UG/KG	BDL	6.9 UG/KG
111	M	SILVER	BDL	1.9 UG/KG	BDL	1.7 UG/KG	BDL	1.6 UG/KG	BDL	1.9 UG/KG
112	M	THALLIUM	BDL	0.62 UG/KG	BDL	0.53 UG/KG	BDL	0.51 UG/KG	BDL	0.61 UG/KG
113	M	ZINC	217	UG/KG	184	UG/KG	67	E N UG/KG	3510	E N UG/KG
114	M	BARIUM	68	UG/KG	41	UG/KG	24	UG/KG	115	UG/KG
115	M	IRON	22100	UG/KG	22000	UG/KG	23300	E UG/KG	15000	E UG/KG
116	M	MANGANESE	1780	N UG/KG	4390	N UG/KG	4930	UG/KG	414	UG/KG
117	M	VANADIUM	47	E UG/KG	48	E UG/KG	95	E N UG/KG	40	E N UG/KG
118	M	ALUMINUM	3860	UG/KG	3190	UG/KG	2960	N UG/KG	7660	N UG/KG
120	M	COBALT	1.6	UG/KG	BDL	0.97 UG/KG	BDL	0.93 UG/KG	8.8	UG/KG
121	M	MAGNESIUM	13200	UG/KG	13800	UG/KG	41600	N UG/KG	74100	N UG/KG
129	M	CALCIUM	38200	UG/KG	29800	UG/KG	76700	N UG/KG	119000	N UG/KG
130	M	SODIUM	730	UG/KG	476	UG/KG	969	UG/KG	3900	UG/KG
131	M	POTASSIUM	814	UG/KG	BDL	500 UG/KG	BDL	553 UG/KG	3210	UG/KG

Table 6-9

Sediment Volatile Organic Results

CMPD	CL	CMPD-DESC	SITE	86021	86021	86021	86021	86021	86021	86021
			POINT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			SAMPLE	SED#1	SED#2	SED#3	SED#4	SED#5	SED#6	SED-7
			DATE	07/15/87	07/15/87	07/15/87	07/15/87	07/16/87	07/17/87	07/23/87
			DEPTH	0	0	0	0	0	0	0
			MATRIX	SE	SE	SE	SE	SE	SE	SE
		V.O.C. LAB I.D. #		141082	141086	141095	141110	141511	141690	142889
203	V	BENZENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	1.5 J B ug/kg	1.6 J B ug/kg	2.7 J ug/kg
205	V	BROMOFORM		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
206	V	CARBON TETRACHLORIDE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
207	V	CHLOROBENZENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
208	V	DIBROMOCHLOROMETHANE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
209	V	CHLOROETHANE		BDL 14 ug/kg	BDL 15 ug/kg	BDL 14 ug/kg	BDL 13 ug/kg	BDL 12 ug/kg	BDL 16 ug/kg	BDL 14 ug/kg
210	V	2-CHLOROETHYLVINYLETHER		BDL 14 ug/kg	BDL 15 ug/kg	BDL 14 ug/kg	BDL 13 ug/kg	BDL 12 ug/kg	BDL 16 ug/kg	BDL 14 ug/kg
211	V	CHLOROFORM		1.7 J ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	2.1 J ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
212	V	BROMODICHLOROMETHANE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
214	V	1,1-DICHLOROETHANE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
215	V	1,2-DICHLOROETHANE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
216	V	1,1-DICHLOROETHENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
217	V	1,2-DICHLOROPROPANE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
218	V	CIS-1,3-DICHLOROPROPENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
219	V	ETHYLBENZENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
220	V	BROMOMETHANE		BDL 14 ug/kg	BDL 15 ug/kg	BDL 14 ug/kg	BDL 13 ug/kg	BDL 12 ug/kg	BDL 16 ug/kg	BDL 14 ug/kg
221	V	CHLOROMETHANE		BDL 14 ug/kg	BDL 15 ug/kg	BDL 14 ug/kg	BDL 13 ug/kg	BDL 12 ug/kg	BDL 16 ug/kg	BDL 14 ug/kg
222	V	METHYLENE CHLORIDE		110 B ug/kg	28 B ug/kg	27 B ug/kg	12 B ug/kg	91 B ug/kg	25 B ug/kg	22 B ug/kg
223	V	1,1,2,2-TETRACHLOROETHANE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
224	V	TETRACHLOROETHENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
225	V	TOLUENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
226	V	TRANS-1,2-DICHLOROETHENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
227	V	1,1,1-TRICHLOROETHANE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
228	V	1,1,2-TRICHLOROETHANE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
229	V	TRICHLOROETHENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
230	V	VINYL CHLORIDE		BDL 14 ug/kg	BDL 15 ug/kg	BDL 14 ug/kg	BDL 13 ug/kg	BDL 12 ug/kg	BDL 16 ug/kg	BDL 14 ug/kg
250	V	TRANS-1,3-DICHLOROPROPENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
251	V	STYRENE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
252	V	ACETONE		23 B ug/kg	16 B ug/kg	40 B ug/kg	17 B ug/kg	120 B ug/kg	24 B ug/kg	17 B ug/kg
253	V	2-BUTANONE		BDL 14 ug/kg	BDL 15 ug/kg	BDL 14 ug/kg	BDL 13 ug/kg	BDL 12 ug/kg	BDL 16 ug/kg	BDL 14 ug/kg
254	V	CARBON DISULFIDE		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg
255	V	2-HEXANONE		BDL 14 ug/kg	BDL 15 ug/kg	BDL 14 ug/kg	BDL 13 ug/kg	BDL 12 ug/kg	BDL 16 ug/kg	BDL 14 ug/kg
256	V	4-METHYL-2-PENTANONE		BDL 14 ug/kg	BDL 15 ug/kg	BDL 14 ug/kg	BDL 13 ug/kg	BDL 12 ug/kg	BDL 16 ug/kg	BDL 14 ug/kg
257	V	VINYL ACETATE		BDL 14 ug/kg	BDL 15 ug/kg	BDL 14 ug/kg	BDL 13 ug/kg	BDL 12 ug/kg	BDL 16 ug/kg	BDL 14 ug/kg
289	V	XYLENES (TOTAL)		BDL 7.1 ug/kg	BDL 7.6 ug/kg	BDL 6.8 ug/kg	BDL 6.3 ug/kg	BDL 6.2 ug/kg	BDL 8.0 ug/kg	BDL 6.8 ug/kg

Table 6-9 (Cont'd)

Sediment Volatile Organic Results

	SITE	86021	86021	86021	86021
	POINT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
	SAMPLE	SED-7 DUP	SED-8	SED-9	SED-10
	DATE	07/23/87	07/23/87	07/23/87	07/23/87
	DEPTH	0	0	0	0
	MATRIX	SE	SE	SE	SE
CMPD CL CMPD-DESC					
V.O.C. LAB I.D. #		142890	142891	142892	142904
203 V BENZENE		2.6 J ug/kg	2.1 J ug/kg	1.8 J ug/kg	BDL 7.2 ug/kg
205 V BROMOFORM		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
206 V CARBON TETRACHLORIDE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
207 V CHLOROBENZENE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
208 V DIBROMOCHLOROMETHANE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
209 V CHLOROETHANE		BDL 15 ug/kg	BDL 12 ug/kg	BDL 12 ug/kg	BDL 14 ug/kg
210 V 2-CHLOROETHYLVINYLETHER		BDL 15 ug/kg	BDL 12 ug/kg	BDL 12 ug/kg	BDL 14 ug/kg
211 V CHLOROFORM		2.2 J ug/kg	5.2 J ug/kg	4 J ug/kg	1.7 J ug/kg
212 V BROMODICHLOROMETHANE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
214 V 1,1-DICHLOROETHANE		BDL 7.4 ug/kg	BDL 6.23 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
215 V 1,2-DICHLOROETHANE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
216 V 1,1-DICHLOROETHENE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
217 V 1,2-DICHLOROPROPANE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
218 V CIS-1,3-DICHLOROPROPENE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
219 V ETHYLBENZENE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
220 V BROMOMETHANE		BDL 15 ug/kg	BDL 12 ug/kg	BDL 12 ug/kg	BDL 14 ug/kg
221 V CHLOROMETHANE		BDL 15 ug/kg	BDL 12 ug/kg	BDL 12 ug/kg	BDL 14 ug/kg
222 V METHYLENE CHLORIDE		18 B ug/kg	43 B ug/kg	23 B ug/kg	20 B ug/kg
223 V 1,1,2,2-TETRACHLOROETHANE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
224 V TETRACHLOROETHENE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
225 V TOLUENE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
226 V TRANS-1,2-DICHLOROETHENE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
227 V 1,1,1-TRICHLOROETHANE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
228 V 1,1,2-TRICHLOROETHANE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
229 V TRICHLOROETHENE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
231 V VINYL CHLORIDE		BDL 15 ug/kg	BDL 12 ug/kg	BDL 12 ug/kg	BDL 14 ug/kg
250 V TRANS-1,3-DICHLOROPROPENE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
251 V STYRENE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
252 V ACETONE		12 B ug/kg	11 J B ug/kg	14 B ug/kg	13 J B ug/kg
253 V 2-BUTANONE		BDL 15 ug/kg	BDL 12 ug/kg	BDL 12 ug/kg	BDL 14 ug/kg
254 V CARBON DISULFIDE		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg
255 V 2-HEXANONE		BDL 15 ug/kg	BDL 12 ug/kg	BDL 12 ug/kg	BDL 14 ug/kg
256 V 4-METHYL-2-PENTANONE		BDL 15 ug/kg	BDL 12 ug/kg	BDL 12 ug/kg	BDL 14 ug/kg
257 V VINYL ACETATE		BDL 15 ug/kg	BDL 12 ug/kg	BDL 12 ug/kg	BDL 14 ug/kg
289 V XYLENES (TOTAL)		BDL 7.4 ug/kg	BDL 6.2 ug/kg	BDL 6 ug/kg	BDL 7.2 ug/kg

Table 6-10

Sediment Base Neutral/Acid Extractable Results

	SITE	86021		86021		86021		86021		86021		86021		86021	
	POINT	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
	SAMPLE	SED#1		SED#2		SED#3		SED#4		SED#5		SED#6		SED-7	
	DATE	07/15/87		07/15/87		07/15/87		07/15/87		07/16/87		07/17/87		07/23/87	
	DEPTH	0		0		0		0		0		0		0	
	MATRIX	SE		SE		SE		SE		SE		SE		SE	
CMPD CL	CMPD-DESC														
	ACID EXTRACT/ BASE NEUT. LAB ID #	141082		141086		141095		141110		141511		141690		142889	
401 B	ACENAPHTHENE	BDL	470 ug/kg	67	J ug/kg	2800	ug/kg	1500	ug/kg	2100	ug/kg	1900	ug/kg	1500	ug/kg
402 B	ACENAPHTHYLENE	850	ug/kg	BDL	520 ug/kg	95	J ug/kg	120	J ug/kg	68	J ug/kg	60	J ug/kg	BDL	920 ug/kg
403 B	ANTHRACENE	1300	ug/kg	120	J ug/kg	3900	ug/kg	2800	ug/kg	3500	ug/kg	3000	ug/kg	2100	ug/kg
405 B	BENZO(A)ANTHRACENE	3800	ug/kg	380	J ug/kg	15000	D ug/kg	7500	ug/kg	13000	D ug/kg	20000	D ug/kg	8700	ug/kg
406 B	BENZO(A)PYRENE	2900	ug/kg	340	J ug/kg	14000	D ug/kg	5900	ug/kg	8100	D ug/kg	13000	D ug/kg	5700	ug/kg
407 B	BENZO(B)FLUORANTHENE	5800	ug/kg	660	ug/kg	14000	D ug/kg	5900	ug/kg	16000	D ug/kg	28000	D ug/kg	14000	ug/kg
408 B	BENZO(G,H,I)PERYLENE	1300	ug/kg	210	J ug/kg	4400	ug/kg	3000	ug/kg	2000	ug/kg	2800	ug/kg	2000	ug/kg
409 B	BENZO(K)FLUORANTHENE	5800	ug/kg	660	ug/kg	16000	D ug/kg	6400	ug/kg	16000	D ug/kg	28000	D ug/kg	14000	ug/kg
410 B	BIS(-2-CHLOROETHOXY)METHANE	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
411 B	BIS(-2-CHLOROETHYL)ETHER	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
412 B	BIS(2-CHLORDISOPROPYL)ETHER	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
413 B	BIS(2-ETHYLHEXYL)PHTHALATE	610	ug/kg	210	J ug/kg	1400	ug/kg	2100	ug/kg	1100	ug/kg	6000	ug/kg	1900	ug/kg
414 B	4-BROMOPHENYL-PHENYLETHER	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
415 B	BUTYLBENZYLPHTHALATE	61	J ug/kg	520	ug/kg	270	J ug/kg	310	J ug/kg	110	J ug/kg	1300	ug/kg	150	J ug/kg
416 B	2-CHLORONAPHTHALENE	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	130	J ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
417 B	4-CHLOROPHENYL-PHENYLETHER	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
418 B	CHRYSENE	3700	ug/kg	470	J ug/kg	16000	D ug/kg	10000	D ug/kg	7300	ug/kg	18000	D ug/kg	7800	ug/kg
419 B	DIBENZ(A,H)ANTHRACENE	480	ug/kg	BDL	520 ug/kg	1900	ug/kg	850	ug/kg	870	ug/kg	1600	ug/kg	930	ug/kg
420 B	1,2-DICHLOROBENZENE	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
421 B	1,3-DICHLOROBENZENE	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
422 B	1,4-DICHLOROBENZENE	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
423 B	3,3'-DICHLOROBENZIDINE	BDL	940 ug/kg	BDL	1000 ug/kg	BDL	900 ug/kg	BDL	850 ug/kg	BDL	850 ug/kg	BDL	1100 ug/kg	BDL	1800 ug/kg
424 B	DIETHYLPHTHALATE	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
425 B	DIMETHYL PHTHALATE	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
426 B	DI-N-BUTYLPHTHALATE	BDL	470 ug/kg	BDL	520 ug/kg	50	J ug/kg	72	J ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
427 B	2,4-DINITROTOLUENE	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
428 B	2,6-DINITROTOLUENE	BDL	470 ug/kg	BDL	520 ug/kg	BDL	450 ug/kg	BDL	430 ug/kg	BDL	420 ug/kg	BDL	550 ug/kg	BDL	920 ug/kg
429 B	DI-N-OCTYL PHTHALATE	BDL	470 ug/kg	BDL	520 ug/kg	190	J ug/kg	400	J ug/kg	140	J ug/kg	520	J ug/kg	160	J ug/kg

Table 6-10 (Cont'd)

Sediment Base Neutral/Acid Extractable Results

	SITE	86021		86021		86021		86021		86021		86021		86021	
	POINT	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
	SAMPLE	SED01		SED02		SED03		SED04		SED05		SED06		SED-7	
	DATE	07/15/87		07/15/87		07/15/87		07/15/87		07/16/87		07/17/87		07/23/87	
	DEPTH	0		0		0		0		0		0		0	
	MATRIX	SE		SE		SE		SE		SE		SE		SE	
CMPD CL	CMPD-DESC														
	ACID EXTRACT/ BASE NEUT. LAB ID #	141092		141096		141095		141110		141511		141690		142089	
431 B	FLUORANTHENE	5800	ug/kg	1000	ug/kg	35000 D	ug/kg	20000 D	ug/kg	27000 D	ug/kg	33000 D	ug/kg	19000 D	ug/kg
432 B	FLUORENE	740	ug/kg	67	ug/kg	3500	ug/kg	2000	ug/kg	3000	ug/kg	2400	ug/kg	1900	ug/kg
433 B	HEXACHLOROBENZENE	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
434 B	HEXACHLOROBUTADIENE	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
435 B	HEXACHLOROCYCLOPENTADIENE	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
436 B	HEXACHLOROETHANE	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
437 B	INDENO(1,2,3-CD)PYRENE	1200	ug/kg	200 J	ug/kg	4400	ug/kg	2700	ug/kg	2000	ug/kg	3000	ug/kg	2000	ug/kg
438 B	ISOPHORONE	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
439 B	NAPHTHALENE	71 J	ug/kg	BDL 520	ug/kg	400 J	ug/kg	140 J	ug/kg	510	ug/kg	220 J	ug/kg	160 J	ug/kg
440 B	NITROBENZENE	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
442 B	N-NITROSO-DI-N-PROPYLAMINE	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
443 B	N-NITROSODIPHENYLAMINE(1)	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
444 B	PHENANTHRENE	6800	ug/kg	690	ug/kg	33000 D	ug/kg	18000 D	ug/kg	21000 D	ug/kg	27000 D	ug/kg	18000 D	ug/kg
445 B	PYRENE	5300	ug/kg	880	ug/kg	37000 D	ug/kg	23000 D	ug/kg	19000 D	ug/kg	28000 D	ug/kg	13000	ug/kg
446 B	1,2,4-TRICHLOROBENZENE	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
474 B	BENZYL ALCOHOL	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
475 B	4-CHLOROANILINE	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
476 B	DIBENZOFURAN	370 J	ug/kg	BDL 520	ug/kg	1800	ug/kg	990	ug/kg	1400	ug/kg	1100	ug/kg	900 J	ug/kg
477 B	2-METHYLNAPHTHALENE	76 J	ug/kg	BDL 520	ug/kg	430 J	ug/kg	180 J	ug/kg	870	ug/kg	200 J	ug/kg	160 J	ug/kg
478 B	2-NITROANILINE	BDL 2400	ug/kg	BDL 2600	ug/kg	BDL 2300	ug/kg	BDL 2100	ug/kg	BDL 2100	ug/kg	BDL 2700	ug/kg	BDL 4600	ug/kg
479 B	3-NITROANILINE	BDL 2400	ug/kg	BDL 2600	ug/kg	BDL 2300	ug/kg	BDL 2100	ug/kg	BDL 2100	ug/kg	BDL 2700	ug/kg	BDL 4600	ug/kg
480 B	4-NITROANILINE	BDL 2400	ug/kg	BDL 2600	ug/kg	BDL 2300	ug/kg	BDL 2100	ug/kg	BDL 2100	ug/kg	BDL 2700	ug/kg	BDL 4600	ug/kg
601 A	2-CHLOROPHENOL	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
602 A	2,4-DICHLOROPHENOL	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
603 A	2,4-DIMETHYLPHENOL	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
604 A	4,6-DINITRO-2-METHYLPHENOL	BDL 2400	ug/kg	BDL 2600	ug/kg	BDL 2300	ug/kg	BDL 2100	ug/kg	BDL 2100	ug/kg	BDL 2700	ug/kg	BDL 4600	ug/kg
605 A	2,4-DINITROPHENOL	BDL 2400	ug/kg	BDL 2600	ug/kg	BDL 2300	ug/kg	BDL 2100	ug/kg	BDL 2100	ug/kg	BDL 2700	ug/kg	BDL 4600	ug/kg
606 A	2-NITROPHENOL	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
607 A	4-NITROPHENOL	BDL 2400	ug/kg	BDL 2600	ug/kg	BDL 2300	ug/kg	BDL 2100	ug/kg	BDL 2100	ug/kg	BDL 2700	ug/kg	BDL 4600	ug/kg
608 A	4-CHLORO-3-METHYLPHENOL	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
609 A	PENTACHLOROPHENOL	120 J	ug/kg	120 J	ug/kg	870 J	ug/kg	2300	ug/kg	1100 J	ug/kg	BDL 2700	ug/kg	BDL 4600	ug/kg
610 A	PHENOL	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
611 A	2,4,6-TRICHLOROPHENOL	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
620 A	2-METHYLPHENOL	BDL 470	ug/kg	BDL 520	ug/kg	BDL 450	ug/kg	BDL 430	ug/kg	BDL 420	ug/kg	BDL 550	ug/kg	BDL 920	ug/kg
622 A	4-METHYLPHENOL	BDL 470	ug/kg	BDL 520	ug/kg	86 J	ug/kg	BDL 430	ug/kg	55 J	ug/kg	270 J	ug/kg	BDL 920	ug/kg
625 A	BENZOIC ACID	BDL 2400	ug/kg	450 J	ug/kg	BDL 2300	ug/kg	BDL 2100	ug/kg	BDL 2100	ug/kg	230 J	ug/kg	BDL 4600	ug/kg
626 A	2,4,5-TRICHLOROPHENOL	BDL 2400	ug/kg	BDL 2600	ug/kg	BDL 22	ug/kg	BDL 2100	ug/kg	BDL 2100	ug/kg	BDL 2700	ug/kg	BDL 4600	ug/kg

Table 6-10 (Cont'd)

Sediment Base Neutral/Acid Extractable Results

	SITE	86021		86021		86021		86021	
	POINT	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
	SAMPLE	SED-7 DUP		SED-8		SED-9		SED-10	
	DATE	07/23/87		07/23/87		07/23/87		07/23/87	
	DEPTH	0		0		0		0	
	MATRIX	SE		SE		SE		SE	
CMPD CL	CMPD-DESC								
	ACID EXTRACT/ BASE NEUT. LAB ID #	142890		142891		142892		142904	
401 B	ACENAPHTHENE	1900	ug/kg	660 J	ug/kg	400 J	ug/kg	BDL 14	ug/kg
402 B	ACENAPHTHYLENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	110 J	ug/kg
403 B	ANTHRACENE	2900	ug/kg	960	ug/kg	880	ug/kg	160 J	ug/kg
405 B	BENZO(A)ANTHRACENE	10000	ug/kg	3100	ug/kg	2400	ug/kg	340 J	ug/kg
406 B	BENZO(A)PYRENE	8800	ug/kg	2200	ug/kg	1900	ug/kg	950 J	ug/kg
407 B	BENZO(B)FLUORANTHENE	16000	ug/kg	5700	ug/kg	2100	ug/kg	2000	ug/kg
408 B	BENZO(G,H,I)PERYLENE	2200	ug/kg	540 J	ug/kg	520	ug/kg	410 J	ug/kg
409 B	BENZO(K)FLUORANTHENE	16000	ug/kg	5700	ug/kg	2100	ug/kg	2000	ug/kg
410 B	BIS(-2-CHLOROETHOXY)METHANE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
411 B	BIS(-2-CHLOROETHYL)ETHER	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
412 B	BIS(2-CHLORDISOPROPYL)ETHER	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
413 B	BIS(2-ETHYLHEXYL)PHTHALATE	1700	ug/kg	780 J	ug/kg	900	ug/kg	1900	ug/kg
414 B	4-BROMOPHENYL-PHENYLETHER	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
415 B	BUTYLBENZYLPHTHALATE	260 J	ug/kg	130 J	ug/kg	BDL 820	ug/kg	1800	ug/kg
416 B	2-CHLORONAPHTHALENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
417 B	4-CHLOROPHENYL-PHENYLETHER	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
418 B	CHRYSENE	9900	ug/kg	2700	ug/kg	2600	ug/kg	550 J	ug/kg
419 B	DIBENZ(A,H)ANTHRACENE	1100	ug/kg	BDL 850	ug/kg	270	ug/kg	150 J	ug/kg
420 B	1,2-DICHLOROBENZENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
421 B	1,3-DICHLOROBENZENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
422 B	1,4-DICHLOROBENZENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
423 B	3,3'-DICHLOROBENZIDINE	BDL 2000	ug/kg	BDL 1700	ug/kg	BDL 1600	ug/kg	BDL 2000	ug/kg
424 B	DIETHYLPHTHALATE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
425 B	DIMETHYL PHTHALATE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
426 B	DI-N-BUTYLPHTHALATE	120 J	ug/kg	BDL 850	ug/kg	160 J	ug/kg	BDL 980	ug/kg
427 B	2,4-DINITROTOLUENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
428 B	2,6-DINITROTOLUENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
429 B	DI-N-OCTYL PHTHALATE	180 J	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg

Table 6-10 (Cont'd)

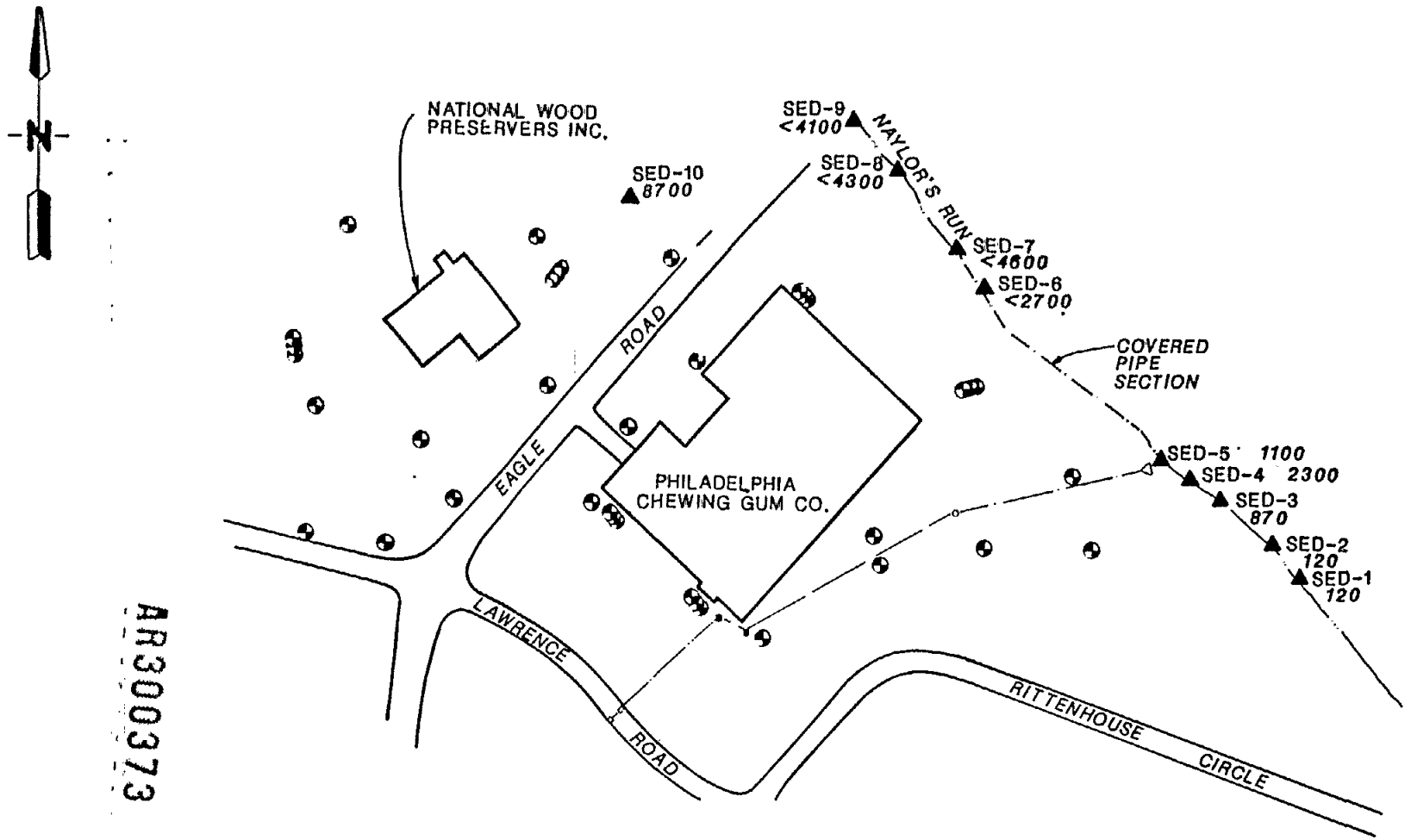
Sediment Base Neutral/Acid Extractable Results

		SITE	86021		86021		86021		86021	
		POINT	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
		SAMPLE	SED-7 DUP		SED-8		SED-9		SED-10	
		DATE	07/23/87		07/23/87		07/23/87		07/23/87	
		DEPTH	0		0		0		0	
		MATRIX	SE		SE		SE		SE	
CMPD	CL	CMPD-DESC								
		ACID EXTRACT/ BASE NEUT. LAB ID #	142890		142891		142892		142904	
431	B	FLUORANTHENE	25000	D ug/kg	900	J ug/kg	7100	ug/kg	600	J ug/kg
432	B	FLUORENE	2500	ug/kg	BDL 850	ug/kg	520	J ug/kg	BDL 980	ug/kg
433	B	HEXACHLOROBENZENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
434	B	HEXACHLOROBUTADIENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
435	B	HEXACHLOROCYCLOPENTADIENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
436	B	HEXACHLOROETHANE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
437	B	INDENO(1,2,3-CD)PYRENE	2600	ug/kg	630	J ug/kg	640	ug/kg	440	J ug/kg
438	B	ISOPHORONE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
439	B	NAPHTHALENE	240	J ug/kg	200	J ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
440	B	NITROBENZENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
442	B	N-NITROSO-DI-N-PROPYLAMINE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
443	B	N-NITROSODIPHENYLAMINE(1)	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
444	B	PHENANTHRENE	20000	D ug/kg	6400	ug/kg	5400	ug/kg	210	J ug/kg
445	B	PYRENE	17000	ug/kg	4900	ug/kg	3600	ug/kg	580	J ug/kg
446	B	1,2,4-TRICHLOROBENZENE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
474	B	BENZYL ALCOHOL	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
475	B	4-CHLOROANILINE	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
476	B	DIBENZOFURAN	1300	ug/kg	440	J ug/kg	250	J ug/kg	BDL 980	ug/kg
477	B	2-METHYLNAPHTHALENE	240	J ug/kg	94	J ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
478	B	2-NITROANILINE	BDL 5000	ug/kg	BDL 4300	ug/kg	BDL 4100	ug/kg	BDL 4900	ug/kg
479	B	3-NITROANILINE	BDL 5000	ug/kg	BDL 4300	ug/kg	BDL 4100	ug/kg	BDL 4900	ug/kg
480	B	4-NITROANILINE	BDL 5000	ug/kg	BDL 4300	ug/kg	BDL 4100	ug/kg	BDL 4900	ug/kg
601	A	2-CHLOROPHENOL	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
602	A	2,4-DICHLOROPHENOL	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
603	A	2,4-DIMETHYLPHENOL	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
604	A	4,6-DINITRO-2-METHYLPHENOL	BDL 5000	ug/kg	BDL 4300	ug/kg	BDL 4100	ug/kg	BDL 4900	ug/kg
605	A	2,4-DINITROPHENOL	BDL 5000	ug/kg	BDL 4300	ug/kg	BDL 4100	ug/kg	BDL 4900	ug/kg
606	A	2-NITROPHENOL	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
607	A	4-NITROPHENOL	BDL 5000	ug/kg	BDL 4300	ug/kg	BDL 4100	ug/kg	BDL 4900	ug/kg
608	A	4-CHLORO-3-METHYLPHENOL	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
609	A	PENTACHLOROPHENOL	BDL 5000	ug/kg	BDL 4300	ug/kg	BDL 4100	ug/kg	8700	ug/kg
610	A	PHENOL	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
611	A	2,4,6-TRICHLOROPHENOL	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
620	A	2-METHYLPHENOL	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	BDL 980	ug/kg
622	A	4-METHYLPHENOL	BDL 1000	ug/kg	BDL 850	ug/kg	BDL 820	ug/kg	100	J ug/kg
625	A	BENZOIC ACID	BDL 5000	ug/kg	BDL 4300	ug/kg	BDL 4100	ug/kg	BDL 4900	ug/kg
626	A	2,4,5-TRICHLOROPHENOL	BDL 5000	ug/kg	BDL 4300	ug/kg	BDL 4100	ug/kg	BDL 4900	ug/kg

detection of PCP in sediment samples SED-1 through SED-5 may be the result of contaminants coming from the 36-inch storm sewer outfall, as evidenced by PCP not being found above detection limits in the sediment and surface water samples collected upstream of this location. However, high detection limits at sediment sampling locations above the storm sewer outfall indicate that there may also be elevated levels of PCP present in the sediment between sampling locations SED-6 through SED-9. Concentrations of PCP in samples below the storm sewer outfall ranged from 2300 ug/kg in SED-4 to 120 ug/kg in SED-1. These results appear to indicate a decrease in PCP concentration in sediments downstream of the concrete headwall of Naylors Run east of Eagle Road, as shown on Figure 6-5.

As shown by Figure 6-6, total concentrations of base neutral and acid extractable compounds were comparatively higher at sediment sampling location SED-6 with 220,770 ug/kg, and also at sediment sampling location SED-3 with 219,091 ug/kg, than at other sediment sampling locations. The least elevated concentration of BNAs was found at sediment sampling location SED-2 with 6,524 ug/kg of total BNAs.

Comparison of the surface water chemical analyses and the sediment chemical analyses shows that a significantly greater number of base neutral and acid extractable compounds were detected in the sediments of Naylors Run than in the surface waters, indicating that the contaminants are adsorbing and concentrating onto the sediments in Naylors Run, rather than remaining in the surface waters. Concentrations of these compounds were elevated in sediment samples collected above the storm sewer outfall, indicating that the source of these



AR300373

LEGEND

- EXISTING WELL LOCATIONS
- STORM SEWER
- SED-9 SEDIMENT SAMPLING POINT
- <4100 ANALYSIS DETECTION LIMIT

200' 0 200'
SCALE IN FEET

FIGURE 6-5

HAVERTOWN PCP SITE
HAVERTOWN, PA

SEDIMENT
PENTACHLOROPHENOL (ug/kg)

drawn SS	approved JNJ	drawing no. 86021-060-AA
checked JST	date 6-15-88	

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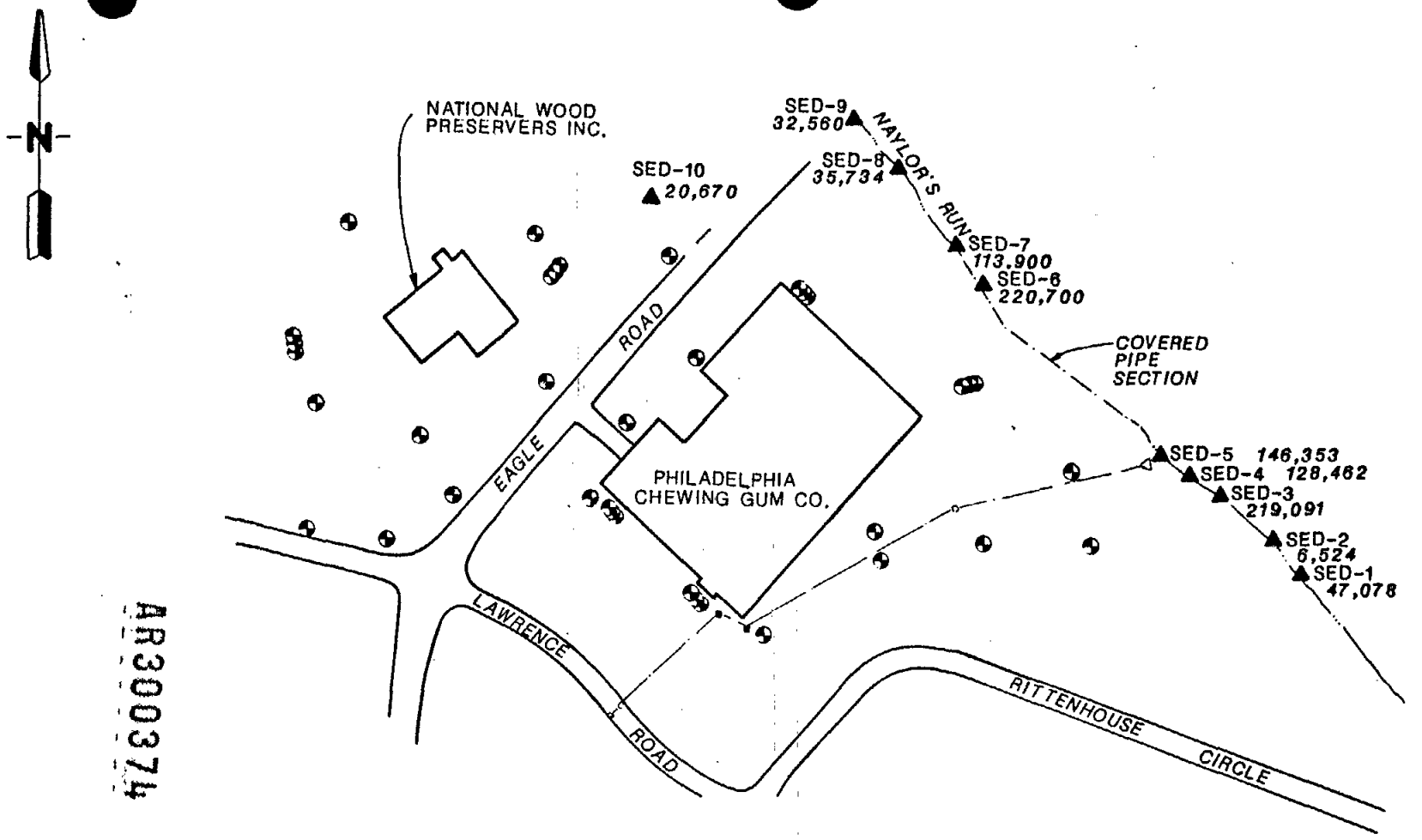

AR300374

6-42

FIGURE 6-6

HAVERTOWN PCP SITE
HAVERTOWN, PA

SEDIMENTS TOTAL BASE NEUTRALS/ACID EXTRACTABLES (ug/kg)

drawn SS	approved JNW	drawing no. 86021-061-AA
checked JST	date 6-15-88	

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middletown pennsylvania

contaminants is probably NWP even though PCP was not found above the elevated detection limits in samples SED-6 through SED-10.

The results of the pesticide and PCB analyses for the sediment samples are included here as Table 6-11. Only three pesticide compounds were identified in the sediments, namely delta-BHC, chlordane, and dieldrin. Delta-BHC was only detected at location SED-5 (storm sewer outfall), at a concentration of 33 ug/kg. Chlordane was found at five sampling points, SED-6 through SED-10 at concentrations ranging between 150 and 420 ug/kg. It appears that the source of chlordane is located above the covered pipe section of Naylors Run, somewhere upstream of location SED-6. The chlordane source is apparently unrelated to the subsurface fuel oil contamination as evidenced by the chemical's absence in Naylors Run below the storm sewer outfall, SED-5. Dieldrin was found in three sediment sampling points, SED-3 through SED-6, with the exclusion of SED-5. No PCBs were found above detection limits in the sediment samples.

Levels of oil and grease were found to be elevated in all of the sediment samples, with the exception of SED-2, in which no concentrations were found above detection limits. Oil and grease levels were highest in SED-10, with 5,300 mg/kg and in SED-6 at 5,400 mg/kg. The highest concentrations of oil and grease were detected above the storm sewer outfall to Naylors Run (SED-5), which indicates that there may be a large portion of dissolved oil and grease entering the stream from this area, as shown by Figure 6-7. Possible sources of oil and grease in this section of the stream could be runoff from nearby road surfaces, parking lots, service stations, or possibly a leaking underground fuel tank in the area. Results for these analyses are included in Table 6-11. Cyanide was only found in one of the 10 sediment

Table 6-11

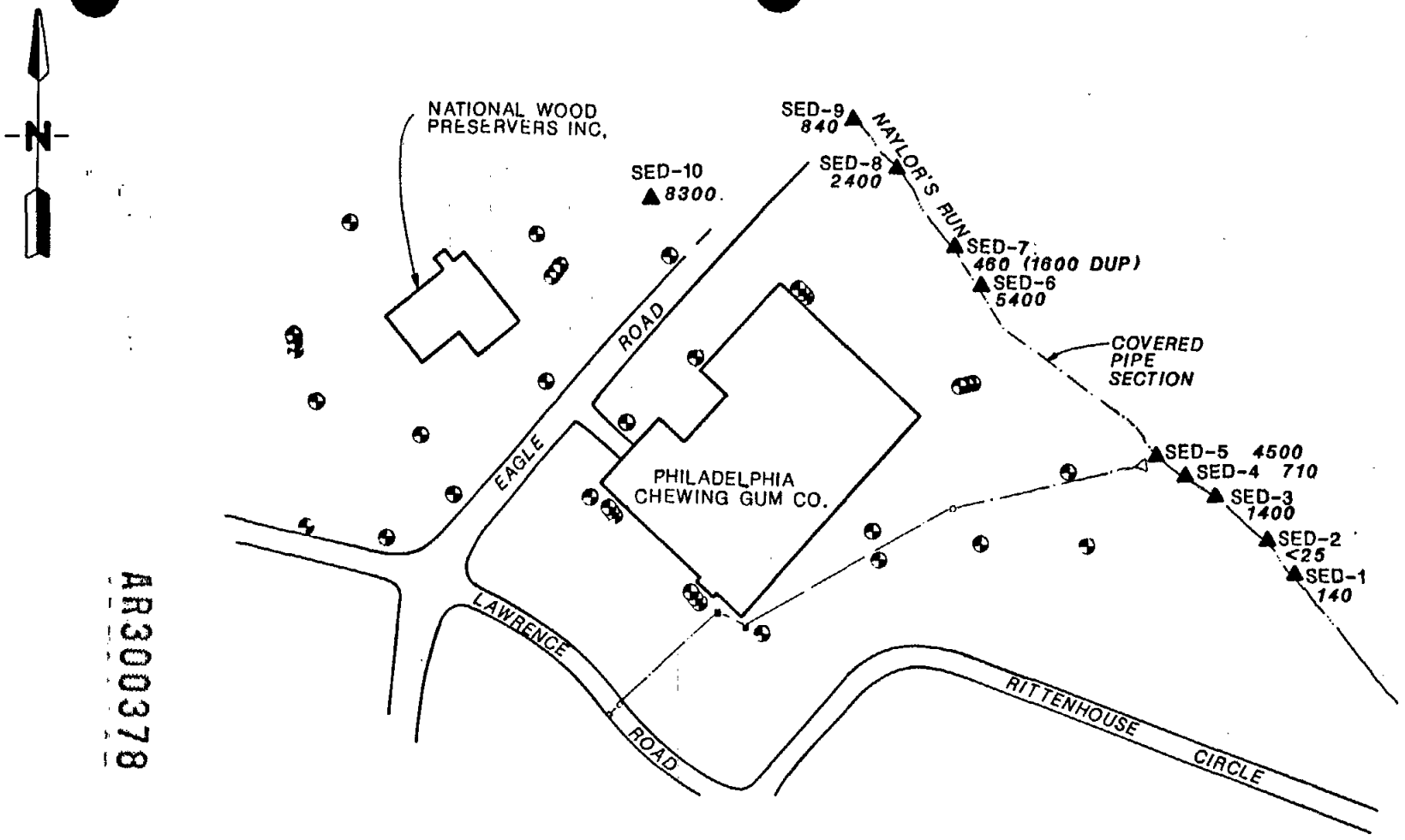
Sediment Pesticide/PCB and Cyanide and Oil & Grease Results

CMPO	CL	CMPO-DESC							
		SITE	86021	86021	86021	86021	86021	86021	86021
		POINT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
		SAMPLE	SED#1	SED#2	SED#3	SED#4	SED#5	SED#6	SED-7
		DATE	07/15/87	07/15/87	07/15/87	07/15/87	07/16/87	07/17/87	07/23/87
		DEPTH	0	0	0	0	0	0	0
		MATRIX	SE	SE	SE	SE	SE	SE	SE
		PESTICIDES / PCB'S LAB ID #	141082	141086	141095	141110	141511	141690	142889
701	P	ALDRIN	BDL 11 ug/kg	BDL 12 ug/kg	BDL 22 ug/kg	BDL 20 ug/kg	BDL 20 ug/kg	BDL 13 ug/kg	BDL 11 ug/kg
702	P	ALPHA-BHC	BDL 11 ug/kg	BDL 12 ug/kg	BDL 22 ug/kg	BDL 20 ug/kg	BDL 20 ug/kg	BDL 13 ug/kg	BDL 11 ug/kg
703	P	BETA-BHC	BDL 11 ug/kg	BDL 12 ug/kg	BDL 22 ug/kg	BDL 20 ug/kg	BDL 20 ug/kg	BDL 13 ug/kg	BDL 11 ug/kg
704	P	GAMMA-BHC	BDL 11 ug/kg	BDL 12 ug/kg	BDL 22 ug/kg	BDL 20 ug/kg	BDL 20 ug/kg	BDL 13 ug/kg	BDL 11 ug/kg
705	P	DELTA-BHC	BDL 11 ug/kg	BDL 12 ug/kg	BDL 22 ug/kg	BDL 20 ug/kg	33 ug/kg	BDL 13 ug/kg	BDL 11 ug/kg
706	P	CHLORDANE	BDL 110 ug/kg	BDL 120 ug/kg	BDL 230 ug/kg	BDL 200 ug/kg	BDL 200 ug/kg	420 ug/kg	300 ug/kg
707	P	4,4'-DDT	BDL 22 ug/kg	BDL 24 ug/kg	BDL 43 ug/kg	BDL 40 ug/kg	BDL 40 ug/kg	BDL 27 ug/kg	BDL 22 ug/kg
708	P	4,4'-DDE	BDL 22 ug/kg	BDL 24 ug/kg	BDL 43 ug/kg	BDL 40 ug/kg	BDL 40 ug/kg	BDL 27 ug/kg	BDL 22 ug/kg
709	P	4,4'-DDD	BDL 22 ug/kg	BDL 24 ug/kg	BDL 43 ug/kg	BDL 40 ug/kg	BDL 40 ug/kg	BDL 27 ug/kg	BDL 22 ug/kg
710	P	DIELDRIN	BDL 22 ug/kg	BDL 24 ug/kg	67 ug/kg	57 ug/kg	BDL 40 ug/kg	30 ug/kg	BDL 22 ug/kg
711	P	ALPHA-ENDOSULFAN	BDL 11 ug/kg	BDL 12 ug/kg	BDL 22 ug/kg	BDL 20 ug/kg	BDL 20 ug/kg	BDL 13 ug/kg	BDL 11 ug/kg
712	P	BETA-ENDOSULFAN	BDL 22 ug/kg	BDL 24 ug/kg	BDL 43 ug/kg	BDL 40 ug/kg	BDL 40 ug/kg	BDL 27 ug/kg	BDL 22 ug/kg
713	P	ENDOSULFAN SULFATE	BDL 22 ug/kg	BDL 24 ug/kg	BDL 43 ug/kg	BDL 40 ug/kg	BDL 40 ug/kg	BDL 27 ug/kg	BDL 22 ug/kg
714	P	ENDRIN	BDL 22 ug/kg	BDL 24 ug/kg	BDL 43 ug/kg	BDL 40 ug/kg	BDL 40 ug/kg	BDL 27 ug/kg	BDL 22 ug/kg
716	P	HEPTACHLOR	BDL 11 ug/kg	BDL 12 ug/kg	BDL 22 ug/kg	BDL 20 ug/kg	BDL 20 ug/kg	BDL 13 ug/kg	BDL 11 ug/kg
717	P	HEPTACHLOR EPOXIDE	BDL 11 ug/kg	BDL 12 ug/kg	BDL 22 ug/kg	BDL 20 ug/kg	BDL 20 ug/kg	BDL 13 ug/kg	BDL 11 ug/kg
718	P	PCB-1242	BDL 110 ug/kg	BDL 120 ug/kg	BDL 230 ug/kg	BDL 200 ug/kg	BDL 200 ug/kg	BDL 130 ug/kg	BDL 110 ug/kg
719	P	PCB-1254	BDL 220 ug/kg	BDL 240 ug/kg	BDL 430 ug/kg	BDL 400 ug/kg	BDL 400 ug/kg	BDL 270 ug/kg	BDL 220 ug/kg
720	P	PCB-1221	BDL 110 ug/kg	BDL 120 ug/kg	BDL 230 ug/kg	BDL 200 ug/kg	BDL 200 ug/kg	BDL 130 ug/kg	BDL 110 ug/kg
721	P	PCB-1232	BDL 110 ug/kg	BDL 120 ug/kg	BDL 220 ug/kg	BDL 200 ug/kg	BDL 200 ug/kg	BDL 130 ug/kg	BDL 110 ug/kg
722	P	PCB-1248	BDL 110 ug/kg	BDL 120 ug/kg	BDL 220 ug/kg	BDL 200 ug/kg	BDL 200 ug/kg	BDL 130 ug/kg	BDL 100 ug/kg
723	P	PCB-1260	BDL 220 ug/kg	BDL 240 ug/kg	BDL 430 ug/kg	BDL 400 ug/kg	BDL 400 ug/kg	BDL 270 ug/kg	BDL 220 ug/kg
724	P	PCB-1016	BDL 110 ug/kg	BDL 120 ug/kg	BDL 220 ug/kg	BDL 200 ug/kg	BDL 200 ug/kg	BDL 130 ug/kg	BDL 110 ug/kg
725	P	TOXAPHENE	BDL 220 ug/kg	BDL 240 ug/kg	BDL 430 ug/kg	BDL 400 ug/kg	BDL 400 ug/kg	BDL 270 ug/kg	BDL 220 ug/kg
726	P	P,P'-METHOXYCHLOR	BDL 110 ug/kg	BDL 120 ug/kg	BDL 220 ug/kg	BDL 200 ug/kg	BDL 200 ug/kg	BDL 130 ug/kg	BDL 110 ug/kg
739	P	ENDRIN KETONE	BDL 22 ug/kg	BDL 24 ug/kg	BDL 43 ug/kg	BDL 40 ug/kg	BDL 40 ug/kg	BDL 27 ug/kg	BDL 22 ug/kg
			141083	141090	141106	141111	141522	141691	142919
1001	C	CYANIDE	BDL 0.71 MG/KG	BDL 0.77 MG/KG	BDL 0.68 MG/KG	1.3 MG/KG	BDL 0.62 MG/KG	BDL 0.81 MG/KG	BDL 0.68 MG/KG
			141113	14114	141115	141116	141512	141692	142954
1033	C	OIL AND GREASE	140 mg/kg	BDL 25 mg/kg	1400 mg/kg	710 mg/kg	4500 mg/kg	5400 mg/kg	460 mg/kg
			141082	141086	141095	141110	141511	141690	142889
1047	C	PH	7.07 pH	7.03 pH	6.99 pH	7.05 pH	6.94 pH	7.21 pH	6.97 pH
			141083	141086	141106	141111	141522	141691	142919
1080	C	PERCENT SOLIDS	70	65	73	79	80	62	73

Table 6-11 (Cont'd)

Sediment Pesticide/PCB and Cyanide and Oil & Grease Results

		SITE	84021		84021		84021		84021	
		POINT	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
		SAMPLE	SED-7 DUP		SED-8		SED-9		SED-10	
		DATE	07/23/87		07/23/87		07/23/87		07/23/87	
		DEPTH	0		0		0		0	
		MATRIX	SE		SE		SE		SE	
CMPD	CL	CMPD-DESC								
		PESTICIDES / PCB'S LAB ID #	142890		142891		142892		142904	
701	P	ALDRIN	BDL	12 ug/kg	BDL	10 ug/kg	BDL	9.7 ug/kg	BDL	23 ug/kg
702	P	ALPHA-BHC	BDL	12 ug/kg	BDL	10 ug/kg	BDL	9.7 ug/kg	BDL	23 ug/kg
703	P	BETA-BHC	BDL	12 ug/kg	BDL	10 ug/kg	BDL	9.7 ug/kg	BDL	23 ug/kg
704	P	GAMMA-BHC	BDL	12 ug/kg	BDL	10 ug/kg	BDL	9.7 ug/kg	BDL	23 ug/kg
705	P	DELTA-BHC	BDL	12 ug/kg	BDL	10 ug/kg	BDL	9.7 ug/kg	BDL	23 ug/kg
706	P	CHLORDANE	150	ug/kg	170	ug/kg	330	ug/kg	BDL	230 ug/kg
707	P	4,4'-DDT	BDL	24 ug/kg	BDL	20 ug/kg	BDL	19 ug/kg	BDL	46 ug/kg
708	P	4,4'-DDE	BDL	24 ug/kg	BDL	20 ug/kg	BDL	19 ug/kg	BDL	46 ug/kg
709	P	4,4'-DDD	BDL	24 ug/kg	BDL	20 ug/kg	BDL	19 ug/kg	BDL	465 ug/kg
710	P	DIELDRIN	BDL	24 ug/kg	BDL	20 ug/kg	BDL	19 ug/kg	BDL	46 ug/kg
711	P	ALPHA-ENDOSULFAN	BDL	12 ug/kg	BDL	10 ug/kg	BDL	9.7 ug/kg	BDL	23 ug/kg
712	P	BETA-ENDOSULFAN	BDL	24 ug/kg	BDL	20 ug/kg	BDL	19 ug/kg	BDL	46 ug/kg
713	P	ENDOSULFAN SULFATE	BDL	24 ug/kg	BDL	20 ug/kg	BDL	19 ug/kg	BDL	46 ug/kg
714	P	ENDRIN	BDL	24 ug/kg	BDL	20 ug/kg	BDL	19 ug/kg	BDL	46 ug/kg
716	P	HEPTACHLOR	BDL	12 ug/kg	BDL	10 ug/kg	BDL	9.7 ug/kg	BDL	23 ug/kg
717	P	HEPTACHLOR EPOXIDE	BDL	12 ug/kg	BDL	10 ug/kg	BDL	9.7 ug/kg	BDL	23 ug/kg
718	P	PCB-1242	BDL	120 ug/kg	BDL	100 ug/kg	BDL	97 ug/kg	BDL	230 ug/kg
719	P	PCB-1254	BDL	240 ug/kg	BDL	200 ug/kg	BDL	190 ug/kg	BDL	460 ug/kg
720	P	PCB-1221	BDL	120 ug/kg	BDL	100 ug/kg	BDL	97 ug/kg	BDL	230 ug/kg
721	P	PCB-1232	BDL	120 ug/kg	BDL	100 ug/kg	BDL	97 ug/kg	BDL	230 ug/kg
722	P	PCB-1248	BDL	120 ug/kg	BDL	100 ug/kg	BDL	97 ug/kg	BDL	230 ug/kg
723	P	PCB-1260	BDL	240 ug/kg	BDL	200 ug/kg	BDL	190 ug/kg	BDL	460 ug/kg
724	P	PCB-1016	BDL	120 ug/kg	BDL	100 ug/kg	BDL	97 ug/kg	BDL	230 ug/kg
725	P	TOXAPHENE	BDL	240 ug/kg	BDL	200 ug/kg	BDL	190 ug/kg	BDL	460 ug/kg
726	P	P,P'-METHOXYCHLOR	BDL	120 ug/kg	BDL	100 ug/kg	BDL	97 ug/kg	BDL	230 ug/kg
739	P	ENDRIN KETONE	BDL	24 ug/kg	BDL	20 ug/kg	BDL	19 ug/kg	BDL	6 ug/kg
			142921		142922		142923		142929	
1001	C	CYANIDE	BDL	0.72 MG/KG	BDL	0.61 MG/KG	BDL	0.58 MG/KG	BDL	0.73 MG/KG
			142957		142967		142974		142975	
1033	C	OIL AND GREASE		1600 mg/kg		2400 mg/kg		840 mg/kg		8300 mg/kg
			142890		142891		142892		142904	
1047	C	PH		6.9 pH		7.35 pH		7.29 pH		7.19 pH
			142921		142922		142923		142929	
1080	C	PERCENT SOLIDS		69		82		86		69



AR300378

LEGEND

- EXISTING WELL LOCATIONS
- STORM SEWER
- SED-9 SEDIMENT SAMPLING POINT

200' 0 200'

SCALE IN FEET

FIGURE 6-7

HAVERTOWN PCP SITE
HAVERTOWN, PA

SEDIMENTS OIL AND GREASE (mg/kg)

drawn SS	approved JNW	drawing no. 86021-062-AA
checked JST	date 6-15-88	

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samples from Naylors Run, at location SED-4, with a concentration of 1.3 mg/kg.

Results from the dioxin and dibenzofuran analysis were below detection levels and may be explained by the potential degrading effect that ultraviolet light has on these isomers or because no measurable concentrations were accumulating in the sediments which were sampled. Results of the dioxin and dibenzofuran analysis in the sediment samples are included in Tables 6-12 and 6-13.

6.3.4 Summary of Findings

Chemical data from the sediment samples collected from Naylors Run indicate that contaminants, specifically PCP, dioxin, dibenzofuran, oil and grease, chromium, lead, and gasoline/fuel oil components, are accumulating in the sediments. In addition to PCP, several other base neutral and acid extractable compounds were detected at elevated levels in all sediment samples. No VOAs were detected in Naylors Run sediments. Contamination in Naylors Run can be divided into two distinct areas, above (SED-1 to SED-5) and below (SED-6 to SED-10) the storm sewer outlet.

The source of contamination in sediment samples SED-1 to SED-5 appears to be predominantly from the oil which was entering Naylors Run around the 36-inch storm sewer outlet that runs behind the Philadelphia Chewing Gum property. Contaminants in the oil such as PCP, chlorinated dioxin and dibenzofuran, and several fuel oil constituents can be found in significant concentrations in all of these sediment samples. Concentrations

Table 6-12

Sediment Dioxin Results

SITE:	86021	86021	86021	86021	86021	86021	86021
POINT:	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-6(DUP)
LAB ID #:	30892-6RI	30892-9	30892-3	30892-10RX2	30892-8	30892-1	30892-7
GC/MS DATE:	9-10-87	9-10-87	9-10-87	9-10-87	9-10-87	9-10-87	9-10-87
MATRIX:	SED	SED	SED	SED	SED	SED	SED
TCDD	BDL 0.016 ppt	BDL 0.017 ppt	BDL 0.016 ppt	BDL 0.009 ppt	BDL 0.019 ppt	BDL 0.051 ppt	BDL 0.038 ppt
2378 TCDD	BDL 0.016 ppt	BDL 0.017 ppt	BDL 0.016 ppt	BDL 0.009 ppt	BDL 0.019 ppt	BDL 0.051 ppt	BDL 0.038 ppt
PnCDD	BDL 0.042 ppt	BDL 0.025 ppt	BDL 0.058 ppt	BDL 0.04 ppt	BDL 0.032 ppt	BDL 0.069 ppt	BDL 0.05 ppt
12378 PnCDD							
HxCDD	1.0 ppt	BDL 0.097 ppt	2.0 ppt	0.13 ppt	0.94 ppt	BDL 0.02 ppt	BDL 0.094 ppt
123478 HxCDD							
123678 HxCDD							
123789 HxCDD							
HpCDD	14.6 ppt	0.26 ppt	25.5 ppt	5.7 ppt	7.4 ppt	1.8 ppt	1.9 ppt
1234678 HpCDD							
OCDD	62.1 ppt	11.1 ppt	90.5 ppt	19.6 ppt	30.9 ppt	7.6 ppt	7.5 ppt

Table 6-12 (Cont'd)

Sediment Dioxin Results

	SITE:	86021	86021	86021	86021
	POINT:	SED-7	SED-8	SED-9	SED-10
	LAB ID #:	30892-11	30892-4	30892-2	30892-5
	GC/MS DATE:	9-10-87	9-10-87	9-10-87	9-10-87
	MATRIX:	SED	SED	SED	SED
TCDD		BDL 0.026 ppt	BDL 0.036 ppt	BDL 0.012 ppt	BDL ? ppt
2378 TCDD		BDL 0.026 ppt	BDL 0.036 ppt	BDL 0.012 ppt	0.15 ppt
PnCDD		BDL 0.034 ppt	BDL 0.092 ppt	BDL 0.048 ppt	3.4 ppt
12378 PnCDD					3.5 ppt
HxCDD		BDL 0.054 ppt	BDL 0.044 ppt	BDL 0.06 ppt	80.4 ppt
123478 HxCDD					8.6 ppt
123678 HxCDD					26.7 ppt
123789 HxCDD					21.3 ppt
HpCDD		0.65 ppt	0.16 ppt	0.27 ppt	422 ppt
1234678 HpCDD					630 ppt
OCDD		2.3 ppt	1.5 ppt	1.3 ppt	2546 ppt

Sediment Dibenzofuran Results

	SITE:	86021	86021	86021	86021	86021	86021	86021
	POINT:	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SE-6(DUP)
	LAB ID #:	30892-6R1	30892-9	30892-3	30892-10RX	30892-8	30892-1	30892-7
	GC/MS DATE:	9-10-87	9-10-87	9-10-87	9-10-87	910-87	9-10-87	9-10-87
	MATIRX:	SED	SED	SED	SED	SED	SED	SED
CDF NAME								
TCDF		BDL 0.014 ppt	BDL 0.0084 ppt	BDL 0.012 ppt	BDL 0.023 ppt	BDL 0.032 ppt	BDL 0.026 ppt	BDL 0.02 ppt
2378 TCDF		BDL 0.014 ppt	BDL 0.0084 ppt	BDL 0.012 ppt	BDL 0.023 ppt	BDL 0.032 ppt	BDL 0.026 ppt	BDL 0.02 ppt
PnCDF		BDL 0.029 ppt	BDL 0.016 ppt	0.065 ppt	BDL 0.046 ppt	BDL 0.027 ppt	BDL 0.063 ppt	BDL 0.046 ppt
12378 PnCDF								
23478 PnCDF								
HxCDF		2.0 ppt	BDL 0.022 ppt	3.5 ppt	0.083 ppt	0.54 ppt	BDL 0.14 ppt	0.19 ppt
123478 HxCDF								
123678 HxCDF								
123789 HxCDF								
234678 HxCDF								
HpCDF		14.6 ppt	0.025 ppt	25 ppt	5.5 ppt	3.9 ppt	0.80 ppt	0.82 ppt
1234678 HpCDF								
1234789 HpCDF								
OCDF		20.9 ppt	0.32 ppt	38.6 ppt	7.1 ppt	5.4 ppt	1.1 ppt	0.95 ppt

(# MPC)
(## POSSIBLE DPE INTERFERENCE)

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Table 6-13 (Cont'd)

Sediment Dibenzofuran Results

	SITE:	86021	86021	86021	86021
	POINT:	SED-7	SED-8	SED-9	SED-10
	LAB ID #:	30892-11	30892-4	30892-2	30892-5
	GC/MS DATE:	9-10-87	9-10-87	9-10-87	9-10-87
	MATRIX:	SED	SED	SED	SED
CDF NAME					
TCDF		BDL 0.026 ppt	BDL 0.028 ppt	BDL 0.015 ppt	0.13 ppt
2378 TCDF		BDL 0.026 ppt	BDL 0.028 ppt	BDL 0.015 ppt	BDL 0.06 ppt
PeCDF		BDL 0.036 ppt	BDL 0.081 ppt	BDL 0.037 ppt	1106 ppt
12378 PeCDF					0.74 ppt
23478 PeCDF					0.51 * ppt
HxCDF		BDL 0.037 ppt	BDL 0.047 ppt	BDL 0.022 ppt	178 ppt
123478 HxCDF					3.5 ** ppt
123678 HxCDF					3.5 ppt
123789 HxCDF					0.55 ppt
234678 HxCDF					4.1 ppt
HpCDF		0.25 ppt	BDL 0.015 ppt	BDL 0.11 ppt	429 ppt
1234678 HpCDF					192 ppt
1234789 HpCDF					7.7 ppt
OCDF		BDL 0.39 ppt	BDL 0.30 ppt	BDL 0.15 ppt	973 ppt

(* MPC)
(** POSSIBLE DPE INTERFERENCE)

of these contaminants were found to be progressively lower in samples collected downstream of the storm sewer outlet.

The source of contamination in sediment samples SED-6 to SED-10 was probably the result of storm water runoff from Eagle Road, with lower amounts of contamination being added by the fuel oil plume and/or contaminants which could be originating from nearby off-site sources. Contaminants in these samples were predominantly fuel oil and gasoline related components, along with some pesticide compounds. PCP was not detected in measurable levels in these samples with exception of SED-10 which had the highest level in the sediment sampling program. In addition, sediment location SED-10 also had significant concentrations of dioxin and dibenzofuran isomers present. SED-10, as mentioned previously, was located adjacent to NWP in the drainage ditch north of the property and is influenced by surface water runoff and storm sewer pipe discharges from the property.

7.0 AIR QUALITY MONITORING INVESTIGATION

7.0 AIR QUALITY MONITORING INVESTIGATION

Air quality monitoring was conducted on three separate occasions during the RI phase at the Havertown PCP site. The air sampling and analysis work was performed by REWAI's air quality laboratory subcontractor U. S. Testing Corporation (USTC) of Hoboken, New Jersey. The purpose of the air quality monitoring was to provide an assessment of air quality in the immediate area of NWP during the RI.

The air quality monitoring comprised three sampling rounds, with each round consisting of 24-hour composite air samples collected over a period of 3 consecutive 8-hour days. The first round of air sampling was conducted between June 28, 1987 and June 30, 1987, prior to any invasive operations at the site in order to assess the existing site air quality. The second round of air sampling occurred between March 14, 1988 and March 16, 1988, during the RI groundwater sampling (Round #2) and hydrologic testing. The third round of air sampling was conducted between March 30, 1988 and April 1, 1988, at the conclusion of the RI field investigation to assess any adverse effects to the air quality as a result of the RI field investigation.

7.1 Air Sampling Locations

Air quality sampling locations were chosen in the field after the initial site reconnaissance was completed. Originally, as detailed in the Havertown PCP site RI/FS Site Operations Plan, the air sampling program was to utilize a three-zone monitoring area consisting of an upwind zone, a downwind zone, and the decontamination/support zone. However, after the initial site reconnaissance, it became obvious that distinct zones based upon

wind direction could not be established on a short-term basis at this site due to the variable nature of the wind as observed on-site. Even if a prominent wind direction were evident at the Havertown PCP site, the short-term nature of this type of air quality sampling would make it very difficult to discern patterns that may occur as a result of this prominent wind direction. Because distinct wind zones could not be ascertained and due to the short-term nature of the air quality sampling, three locations were chosen by REWAI and used for all air quality sampling rounds which would allow the maximum quantity of "contaminants" emanating from NWP during the RI to be detected. It should also be noted that property owners' requests were considered when locating air quality sampling stations. Air monitoring station number one was located at the support zone near the office trailers and equipment decontamination pad. Air monitoring station number two was located along the north-fence line of NWP just west of the main gate, and air monitoring station number three was located near the southwest corner of NWP on the property of Continental Motors. Figure 7-1 depicts the air sampling locations.

7.2 Air Sampling Procedures

For each sampling phase, a 24-hour composite air sample was collected (eight-hour samples per day collected on three consecutive days). At each of the three air sampling locations, gas and particulate analyses were conducted. Portable sampling pumps powered by a gasoline generator were used to pull air through a Tenax tube at a flow rate of approximately 24 liters per hour. Sampling tubes and pumps were protected from the wind and weather by a shelter which allowed free transport of volatile organics from the earth. Sampling tubes were placed on the

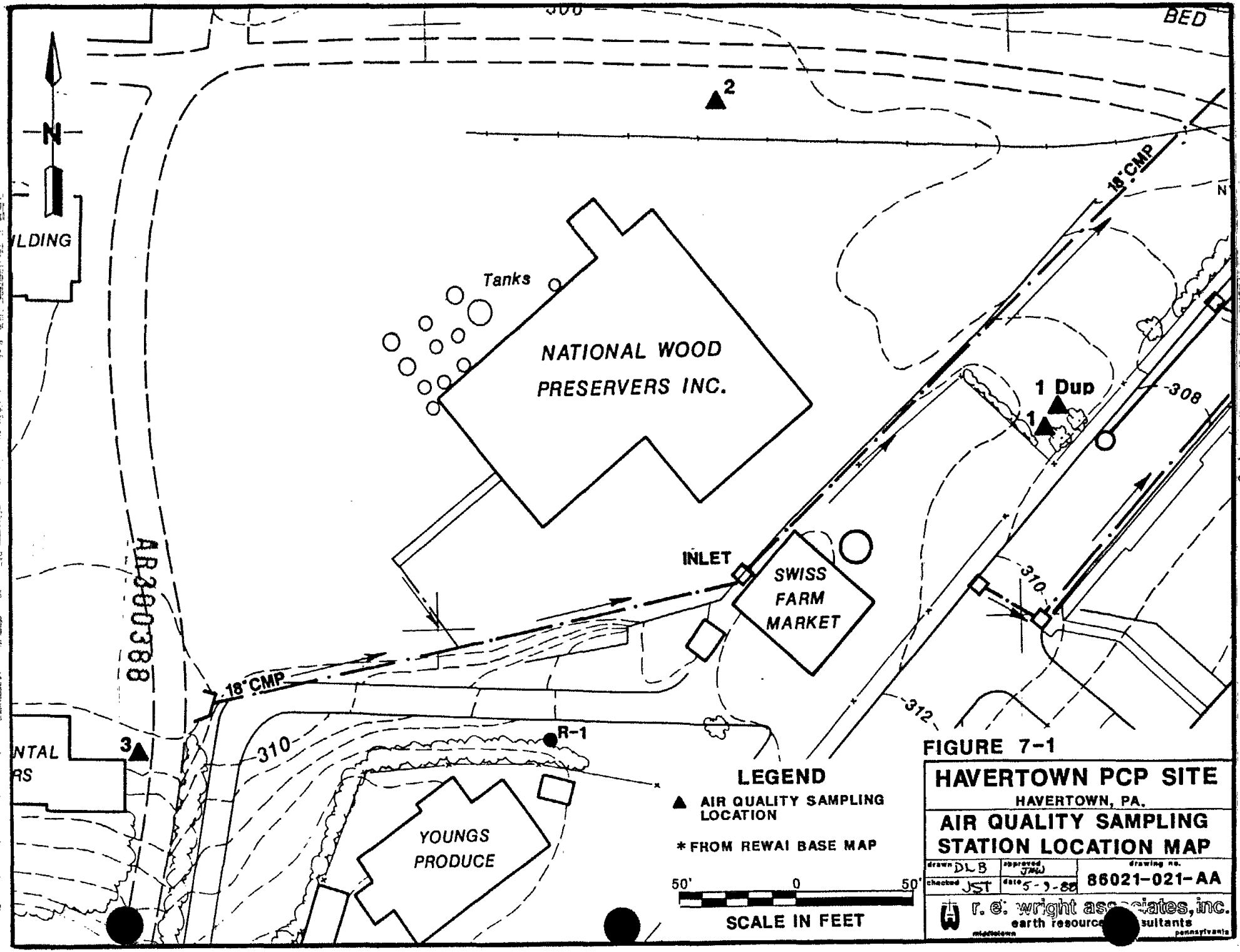

FIGURE 7-1

HAVERTOWN PCP SITE

HAVERTOWN, PA.

AIR QUALITY SAMPLING STATION LOCATION MAP

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r. e. wright associates, inc.
earth resources consultants
middletown pennsylvania

breathing zone, approximately four feet above ground surface. After sampling for volatile organics was completed, the Tenax tubes were capped, placed in shipping containers, sealed with chain-of-custody tape, and placed in ice-filled storage boxes for transport to the analytical laboratory. Both actual sampling and laboratory analyses were performed by USTC.

Once the samples were received by USTC's laboratory, they were placed in a freezer to await desorption and subsequent analysis. Analysis of Tenax samples occurred within 48 hours of sample receipt using heated headspace desorption and sample analysis by Finnigan Gas Chromatography/Mass Spectrometry systems. Tenax tube samples were analyzed for the HSL parameters and oil and grease volatiles.

Particulates and aerosols were sampled at the same locations as the volatile organics; however, the sampling devices were not afforded the same shelter from wind and weather as the volatile organic samplers were. Particulate and aerosol sampling took place in a position three to four feet above the ground surface with the face of the filter facing up. A shelter which minimizes the amount of rain that can fall on the filter assembly was provided. The particulate samplers consisted of high-volume air sampling equipment with constant sampling rate controls and glass filter media. Upon completion of sampling, the filter media were placed in air-tight containers by USTC personnel and transported to the laboratory.

Particulate analyses were initiated by the laboratory within 48 hours of sample receipt, with sample filter media being sectioned into organic and inorganic fractions for respective analyses. The organic fraction was subjected to a continuous

extraction procedure according to EPA protocols with subsequent analysis for base neutral/acid extractable organics and pesticides. These analyses were performed by gas chromatography/ mass spectrometry for base neutral/acid extractable organics and gas chromatography with ECD for pesticides.

The inorganic fraction was subjected to various preparation techniques including acid digestion and distillations. The extracts were analyzed for HSL metals and total cyanide.

Included with each round of samples was a duplicate sample collected at air monitoring station one. In addition, a check sample for volatile organics was also collected by exposing an open Tenax tube to ambient conditions at each sampling location. This tube was not connected to an air sampling pump. This sample serves as a check on pumped volatile organic samples because it has been observed that pumped volatile organic results are not always reliable.

7.3 Chemical Results

As shown in Appendix 2, various heavy metals--including all of the HSL metals except selenium, thallium, and cyanide--were detected in the three air quality sampling rounds. The concentrations of metals detected in each round were very similar--with sodium, calcium, and potassium being detected in the highest concentrations. Nickel was detected in similar concentrations at all sampling locations, as were copper and zinc. Chromium, copper, arsenic, and zinc are metals used in wood-treating solutions at NWP; therefore, their presence in the air samples may be the result of soil contamination at NWP from

these solutions and their subsequent entrainment, as dust, by wind.

Volatile organic compounds--such as benzene, toluene, xylene, and ethylbenzene--were detected in all of the samples from each round of sampling. Some unknown portion of these volatiles may be attributed to gasoline exhaust generated by heavy traffic in the vicinity of NWP. It should also be remembered that the air sampling pump was powered by a gasoline generator. Methylene chloride was found to be significantly lower in concentration in round #1 compared to rounds #2 and #3. It should be noted that acetone, which was detected in significant concentrations in rounds #2 and #3, and methylene chloride are common laboratory contaminants and it is questionable whether or not these chemicals are actually emanating from the site.

Acid extractables and base neutrals--such as bis(2-ethylhexyl) phthalate, butylbenzylphthalate, diethylexphthalate, di-n-butyl-phathlate, and dimethylphthalate--were also detected in the analysis. Diethylphthalate was detected in the highest concentrations for this group of chemicals, with the greatest concentrations detected during the second sampling round.

Samples were analyzed for pesticides and PCBs; however, these chemicals were undetected for all of the samples in each sampling round. Dioxins and dibenzofurans were not included in the chemical analysis and therefore no data is available.

All air sampling chemical data are included in Appendix 2 of this report. Comparison of air quality data from sampling rounds #1,

#2, and #3 exhibits data that are quite variable and show no distinct trends. It does not appear that RI activities at the Havertown PCP site had any discernible effects on air quality.

8.0 OTHER INVESTIGATIONS

8.0 OTHER INVESTIGATIONS

8.1 Previous Biota Investigations

During March 1975, DER performed a 24-hour in-stream biological assay of selected organisms in Naylors Run at the Havertown PCP site. The taxa counted included annelida, isopoda, trichoptera, ephemeroptera, coleoptera, amphipoda, diptera, and gastropoda. According to 1975 data, a depression of assayed organisms existed in Naylors Run downstream of the storm sewer outfall (suspected PCP discharge point).

A 1978 biota survey by DER revealed that Cobbs Creek and its tributaries had poor water quality; however, not all of the problems could be attributed to PCP in Naylors Run. The EPA emergency response team also performed an analysis of biota during an April 15, 1982, visit to obtain samples of air, water, and sediments (NUS, December 1983).

8.2 Microbe Investigations

Preliminary work was performed by Atlantic Research during 1978 on the use of in-situ biodegradation of oil contaminated by PCP in the soil at the Havertown PCP site. Their work showed that soil taken at the sampling points was "sterile," with respect to the normal microbiological community expected in soil. In addition, high bacteria levels were identified where the oil enters the stream, possibly indicating that these microorganisms may consume the PCP. Further, it was Atlantic Research's belief that these oil-consuming microorganisms were native to the groundwater (Brugger, April 25, 1978).

Experiments performed by Atlantic Research indicated that a bacterium, known as 041, exhibited healthy growth in PCP/oil contaminated soil. Previous studies had indicated that organisms can degrade PCP; however, no studies were performed to evaluate its ability to degrade the oil constitutents (Brugger, April 25, 1978).

During the RI drilling program, REWAI obtained samples of the surface soil near soil sampling location S-3 at the request of DER. These samples were then transferred to Dr. Carberry of the University of Delaware for use in her research on microbiological degradation of PCP. At this time, no further information is available concerning this separate investigation.

9.0 SUMMARY OF FINDINGS

9.0 SUMMARY OF FINDINGS

The following list summarizes the major findings identified during the Havertown PCP site Remedial Investigation. The findings have been grouped into general categories to allow for easier review.

9.1 General

- Much of the original land surface has been altered extensively by cut-and-fill activities on the NWP, PCG, and the rear of properties along Rittenhouse Circle.

- Improper well construction in some of the original monitoring wells at the site may be adversely influencing the groundwater chemistry results. These well conditions allow suspended sediments, possibly with contaminants adsorbed onto them, to enter the wells and thus the samples which can result in artificially elevated chemical concentrations being reported by the groundwater analyses.

- Groundwater contamination is believed to exist beyond the present monitoring well network in both the bedrock and saprolite units.

- It appears from the chemical results that monitoring wells which contain oil in them, such as R-2 and HAV-02, do not appear to have any pattern of increase in dissolved metals or volatile organics when compared to wells without oil in them. Therefore, alternate sources

for metals and VOAs are thought to be responsible for their presence in the groundwater.

- Pesticides detected in various sampling media are most likely associated with insecticide usage.

9.2 Air

- Distinct wind direction zones (upwind, downwind) could not be established based upon short-term air sampling and the variable nature of the wind.

- All HSL metals, which may be attributable to NWP, except selenium, thallium, and cyanide were detected in all three air sampling rounds.

- Some portion of the VOA results for air sampling may be attributed to heavy traffic in the area.

- BNA results for air sampling primarily consisted of phthalates, with di-ethylphthalate detected in the highest concentrations.

- Air sampling results were highly variable and showed no distinct trends.

9.3 Hydrogeology

- Observations made during the drilling program indicated that the bedrock appears highly foliated under the NWP

plant and seems to become less foliated eastward under the PCG plant.

- According to information obtained from a highly-weathered bedrock outcrop situated approximately 2,500 feet west of NWP, foliation in the exposure was found to be oriented north 50 to 64 degrees east and dipping 83 degrees northwest. Joints were also measured and were oriented north 68 degrees west dipping 39 degrees southwest and north 72 degrees west dipping 84 degrees southwest.

- A review of available historical aerial photographs yielded no new information about fractures in the bedrock, as the area consisted primarily of densely developed urban land.

- The saprolite unit has been separated into two divisions, an upper micaceous saprolite and a basal biotite-schist saprolite, based upon the unit's field-estimated mineral composition and inferred parent rock origin.

- The lack of complete geologic and well construction data for previously installed monitoring wells west of Eagle Road results in large uncertainties in providing a correlation with newly acquired information. The net result is a lack of knowledge in a critical portion of the study area where data are needed to ascertain the migration pathways for immiscible and dissolved contaminants in the groundwater system.

- From the hydraulic conductivity data, it appears that a trend exists in the permeability of the unconsolidated and bedrock aquifer materials. Beneath NWP, the saturated unconsolidated materials tend to have a moderate to moderately high hydraulic conductivity, while under PCG, the saturated unconsolidated aquifer materials become less permeable, with hydraulic conductivities being moderately low. This trend is different in the bedrock aquifer, where materials under NWP are of moderate permeability and, under the southern portion of PCG, they are of moderately high to high permeability. Along the northern portion of PCG property, this trend does not exist, rather the bedrock hydraulic conductivity becomes moderately low. From this information, it would appear that a significant change in hydraulic conductivity exists in the subsurface between NWP and PCG. This change in hydraulic conductivity is believed to modify the flow characteristics of groundwater in the area.

- The geometric mean of horizontal hydraulic conductivity across the site is 2.94 ft/day.

- It appears that the surficial fill unit is completely unsaturated by groundwater.

- The saprolite units vary from partially to completely saturated by groundwater.

- The bedrock is completely saturated across the site and there are no apparent continuous confining layers.

- The flow of groundwater is east to east-southeast across the study area.

- Groundwater has a higher horizontal hydraulic gradient under NWP and Rittenhouse Circle areas (0.021 and 0.030 respectively) and a lower hydraulic gradient (0.007) under the Swiss Farm Market and PCG building. The average horizontal gradient across the site has been estimated at 0.019.

- The overall vertical groundwater gradients found at the site were small, ranging from 0.001 to 0.028, compared to the horizontal gradients. The effect of the vertical potential on groundwater flow, however, can be considerable at some locations, namely wells CW-1, CW-5, and CW-6.

- The changes in groundwater flow gradients are believed to be attributable to changes in permeability of the water table aquifer, indicating that the aquifer is an isotropic and heterogeneous.

- The estimated average groundwater flow velocity was calculated at 0.27 ft/day, using an estimated effective porosity of 21 percent.

- An estimate of the amount of groundwater discharging from the site through a given cross-sectional area (see text) was calculated using Darcy's Law. Given the assumptions of Darcy's Law (see text), the flow rate was estimated at 13,600 gpd. No estimates of seasonal variations of this flow rate could be made from data obtained during this investigation.

9.4 Soil

- Due to the nature of the fill material at the NWP plant--consisting largely of tightly compacted sand, gravel, slag, and railroad ties--hand augering is not a viable technique recommended for any future soil sampling at this location.

- It appears that the primary contaminants in the soil at NWP are associated with petroleum hydrocarbons, probably fuel oil, and PCP. Secondary contamination in the soil consists of chlorinated dioxins and dibenzofurans; heavy metals consisting of arsenic, chromium, copper, lead, and zinc; and solvent-related compounds, including total xylenes, ethylbenzene, toluene, benzene, 4-methyl-2-pentanone, chloromethane, tetrachloroethene, bromomethane, and trichloroethene.

- Because of the constraints of the soil sampling program at the NWP plant, interpretations regarding contaminant concentration zones could not be made with reliability. Accordingly, it is not believed that the full range of contamination was assessed by this soil sampling program.

- The highest concentration of PCP was found at soil sampling location S-5 (storage tank area), at a level of 4,500,000 ug/kg. This sample location also had the greatest concentration of total BNAs (6,195,100 ug/kg).

- PCBs (1,260) were only found at soil sample location S-2 (northern building face of the NWP plant); there the PCB concentrations was 1,600 ug/kg.

- Cyanide was not detected in any of the soil samples.

- Concentrations of oil and grease were detected in every soil sample, with the highest concentration, 560,000 mg/kg, detected in soil sample S-5. Soil sample S-5 was collected in the chemical storage tank area of NWP.

- Chlorinated tetra- through octa-isomers of dioxin and dibenzofuran were detected at various concentrations at each of the soil sampling locations. The octa-dioxin isomer was detected in the highest concentrations and made up the majority of the total dioxin concentration found.

- The greatest levels of total dioxin and dibenzofuran isomers were found at soil sample location S-5 at concentrations of 39,318 ppb and 15,620.9 ppb respectively.

- In general, the highest concentration of HSL chemicals and dioxin/dibenzofuran isomers was found at soil sampling location S-5, in the storage tank area of NWP.

9.5 Groundwater

- Because of the variety of sampling methods which were necessary during the preliminary sampling round (Round #1), some variation in the analytical results is expected to have been introduced to the data. However, no quantification of this variance is available.

- Water-soluble chemical contaminants have been identified in the groundwater at the Havertown PCP site. The contaminants apparently originate from sources of fuel/gasoline oil components which may occur from the subsurface oil plume, or from nearby off-site sources.

- The solvent/degreaser constituents were not reported in use in any past or present wood-treating operation at NWP and they apparently extend beyond the present groundwater monitoring network. The highest concentrations of solvent/degreaser constituents in the groundwater appear to be located near one of the more upgradient well clusters, the CW-1 series. One or more source areas for solvent/degreaser constituents may exist west (upgradient) of the study area.

- The primary isomers of dioxin found in the groundwater samples were octa-, hepta-, and some hexa-chlorinated dibenzo-p-dioxin.

- Dioxin in the groundwater appears to only be present in the shallow and in some intermediate depth cluster wells, which are geologically situated in the saprolite units.

Dioxin was not detected in the newly installed bedrock monitoring wells.

- Dioxin contamination in the groundwater extends downgradient of the 36-inch storm sewer behind PCG and past the present monitoring well network (HAV-05 and HAV-07).

- PCP is the most frequently found contaminant in groundwater at the site.

- Wells with oil in them do not necessarily have the highest amounts of dissolved concentrations of dioxin and/or dibenzofuran in the groundwater.

9.6 Subsurface Oil

- The specific gravity of the floating subsurface contaminated oil was measured as 0.897.

- The measured thickness of oil in wells at the Havertown PCP site does not in itself reflect the extent of oil contamination on the surface of the water table. Rather, the potential for free-floating immiscible oil, which may be present in the subsurface, is significantly less (estimated at 6,000 gallons) than the 350,000- to 600,000-gallon estimate from previous investigations.

- The migration of the subsurface fuel oil plume may be inhibited near Eagle Road, between NWP and PCG. The cause of this inhibition is not known; however, a stratigraphic oil trap, a structural oil trap, and/or a

lithologic change affecting permeability may be responsible.

- A sample of the subsurface fuel oil was analyzed by EPA for dioxin and dibenzofuran isomers. The analysis revealed that the total dioxin concentration was 49,779 ppt and the total chlorinated dibenzofuran concentration was 46,732.1 ppt. No analysis for HSL chemicals was run on the fuel oil sample during this RI.

9.7 Surface Water

- Most surface water runoff from NWP and PCG properties discharge into Naylors Run.

- From the surface water parameters of dissolved oxygen, pH, and specific conductance, it is apparent that the water discharged by the storm sewer pipe at surface water sampling location SW-5 apparently adversely affects the water quality in Naylors Run at this location. The dissolved oxygen and pH were low (3.7 mg/l and 6.10 respectively) and the specific conductance (583 umhos/cm at 25°C) significantly elevated.

- Several HSL metals--zinc, cobalt, copper, lead, silver, and thallium--were found dissolved in the surface waters of Naylors Run. Of these, the presence of zinc and copper may possibly be linked to NWP because these metals are constituents of water-soluble wood treatment solutions (CZC and CCA) used in the present wood treatment process at the plant. No information is

available at this time to indicate that these metals were part of past NWP operations.

- The greatest concentration of total dissolved selected metals, consisting of arsenic, cadmium, chromium, copper, lead, and zinc, was detected at surface water location SW-1. From the data on selected dissolved metals concentrations, there does not appear to be a particular pattern of metals distribution in the surface water samples collected from Naylors Run.

- Volatile organic aromatic (VOAs) chemicals including benzene, toluene, xylene, 1,1,1-trichloroethane, and trichloroethene were detected only in those surface water samples collected downstream (SW-1 to SW-5) of the storm water pipe. These compounds were not detected in samples which were collected above the storm sewer outfall (SW-6 to SW-10). The only concentrations of VOAs, which were identified in samples above the storm sewer pipe (SW-5 - SW-10), were chloroform and bromodichloromethane.

- The presence of VOAs in samples SW-6 through SW-10 may be indicates a source or sources other than the subsurface fuel oil contamination.

- PCP was consistently detected in surface water samples below the storm sewer pipe at elevated concentrations. However, because of relatively high analysis detection limits on samples taken above the storm water outlet (SW-6 - SW-10), the presence of PCP at these locations should not be ruled out.

- Concentrations of BNA compounds such as acenaphthene, anthracene, fluorene, phenanthrene, 2-methyl naphthalene, and 2,4-dichlorophenol were detected in the surface water samples. BNAs are believed to be indicative of the fuel oil contamination from NWP.

- Pesticides and PCBs were not found above detection limits in the surface water samples.

- Total dioxin concentrations ranged from below detection limits to 20.3 ppt in the surface water samples. Surface water samples SW-1 through SW-5, with the exception of SW-3, contained elevated levels of dioxin. These locations are downstream of the storm sewer pipe.

- Total dibenzofuran concentrations ranged from below detection levels to 13.9 ppt. Like dioxin, dibenzofuran was only found above detection levels in surface water samples SW-1 through SW-5, with the exclusion of SW-3.

9.8 Sediment

- Sediment samples contained comparatively greater concentrations of the selected dissolved metals of arsenic, chromium, copper, and lead than did the surface water samples, probably because of adsorption and concentration. The presence of these metals, with the exception of lead, might be explained by migration or transport of these metals from the NWP plant site into Naylors Run. Currently, wood-treating operations at NWP use metal-salt solutions which are water soluble to preserve wood products. No information on the presence

of metals in the treating solutions from past NWP operations is available at this time.

- VOAs were not found above detection limits in the sediment samples. It is possible that the VOAs were not detected either because the sediment samples were not collected in septum-sealed VOA bottles, because environmental conditions allowed volatilization of some of the VOAs present in the samples, or because VOAs do not adsorb onto sediment as readily as metal or BNA compounds.

- Sediment sample SED-10, located in the drainage ditch just north of the NWP plant site, had the highest concentration of PCP detected in the sediment samples. The high PCP levels at SED-10 are believed to result from the combined input of surface runoff from NWP and discharge from a storm sewer pipe which routes surface water runoff from NWP.

- PCP was found above detection limits in sediment samples SED-1 through SED-5, which may be the result of contaminants discharging from the storm sewer pipe. PCP was not found above detection limits in sediment samples above the storm sewer outlet, SED-6 through SED-9; however, because of high detection limits at these locations, one cannot rule out the presence of elevated levels of PCP at these locations.

- PCP concentrations in the sediments appear to decrease downstream of the concrete headwall (HW #1 on Plate 1) of Naylors Run east of Eagle Road.

- Significantly greater numbers of base neutral and acid extractable compounds were detected in the sediments of Naylors Run than in the surface waters. Thus the contaminants appear to be adsorbing onto the sediments and concentrating in Naylors Run, rather than remaining in the surface waters.

- Only three pesticides, delta-BHC, chlordane, and dieldrin, were identified in the sediments. It would appear that, at least for chlordane, the source of the contamination is located above the covered pipe section of Naylors Run, somewhere upstream of location SED-6. The source for the pesticides is believed to be unrelated to the subsurface fuel oil contamination.

- No PCBs were found in the sediment samples above detection limits.

- Cyanide was only found in sediment sample SED-4 at a concentration of 1.3 mg/kg.

- High concentrations of oil and grease were detected above the storm sewer outfall (SED-5), which indicates that there may be a large portion of dissolved oil and grease entering the stream from this area. Sources for these concentrations could stem from surface water runoff from nearby roadways and parking lots, nearby service

stations, or contaminated groundwater or fuel oil entering the stream here.

- Dioxin and dibenzofuran concentrations were detected at relatively low levels in the sediments, except at location SED-10, where significantly elevated levels were found. Sample SED-10 was taken from the drainage ditch north of the NWP plant site, next to the storm water discharge pipe outlet which runs along the fence line between NWP and Swiss Farm Markets.

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